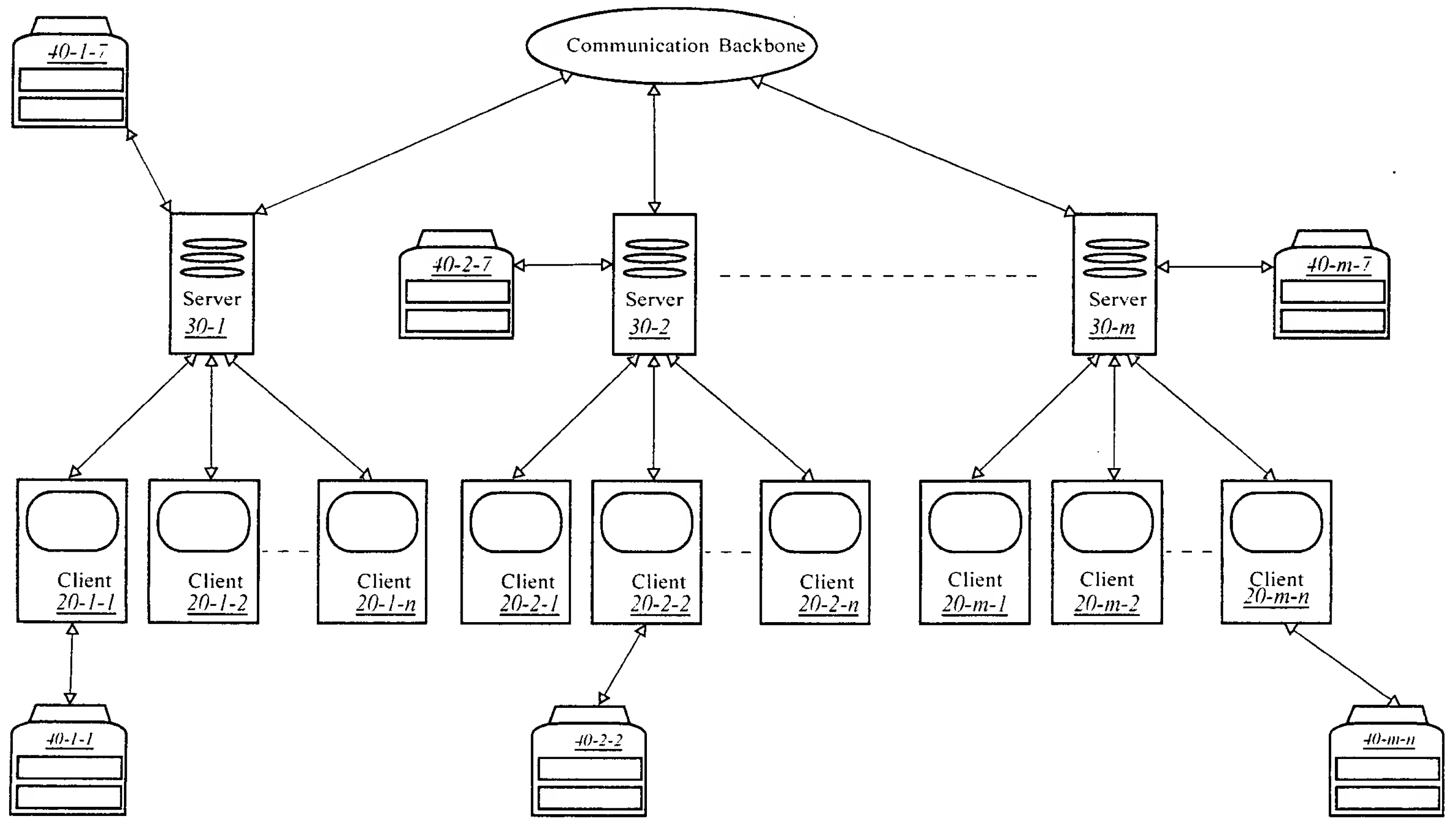
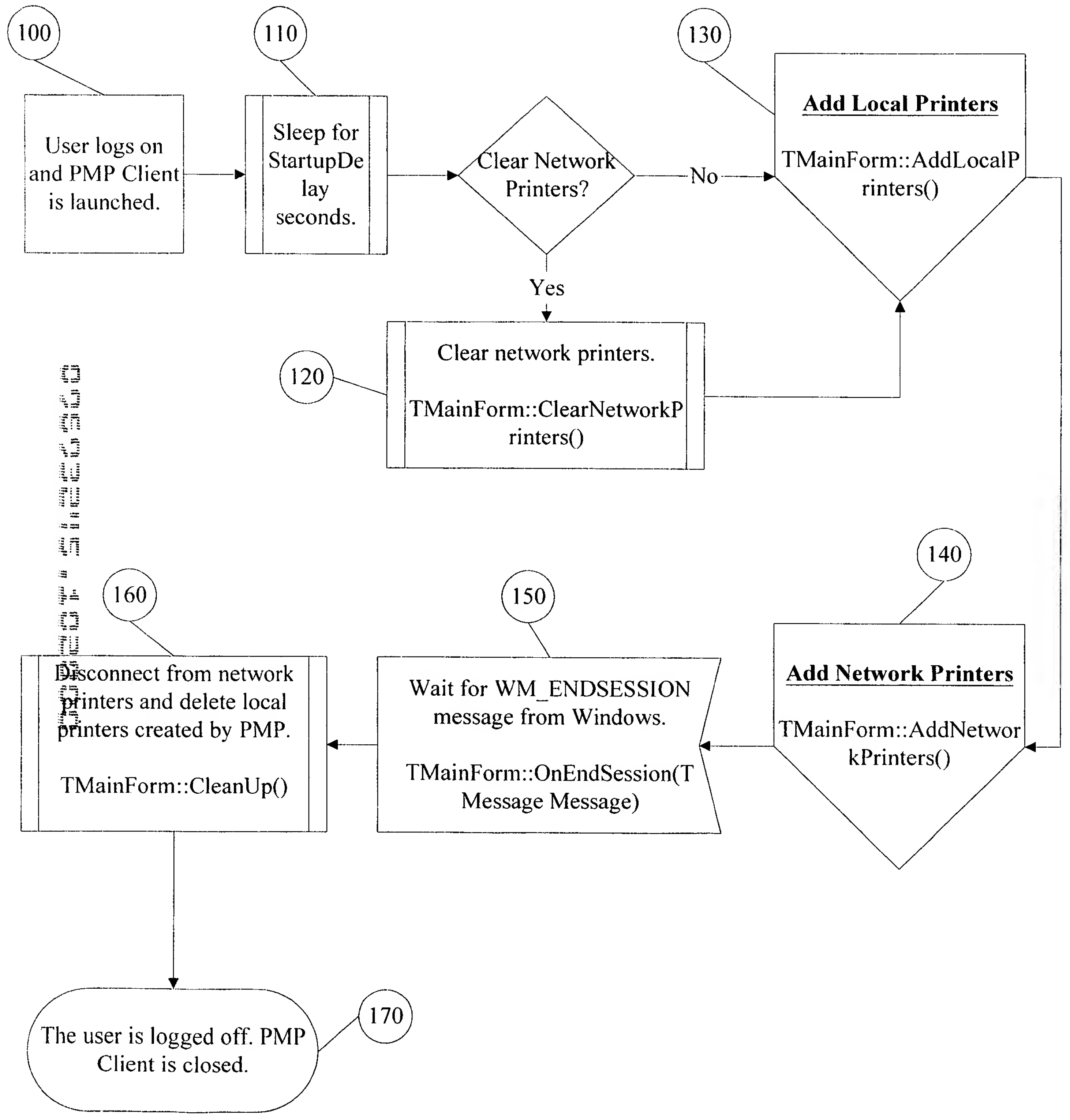
[illegible]



Communication Backbone
40-1-7
40-2-7
40-m-7
Server 30-1
Server 30-2
Server 30-m
Client 20-1-1
Client 20-1-2
Client 20-1-n
Client 20-2-1
Client 20-2-2
Client 20-2-n
Client 20-m-1
Client 20-m-2
Client 20-m-n
40-1-1
40-2-2
40-m-n

Fig. 1

Client Flow Chart

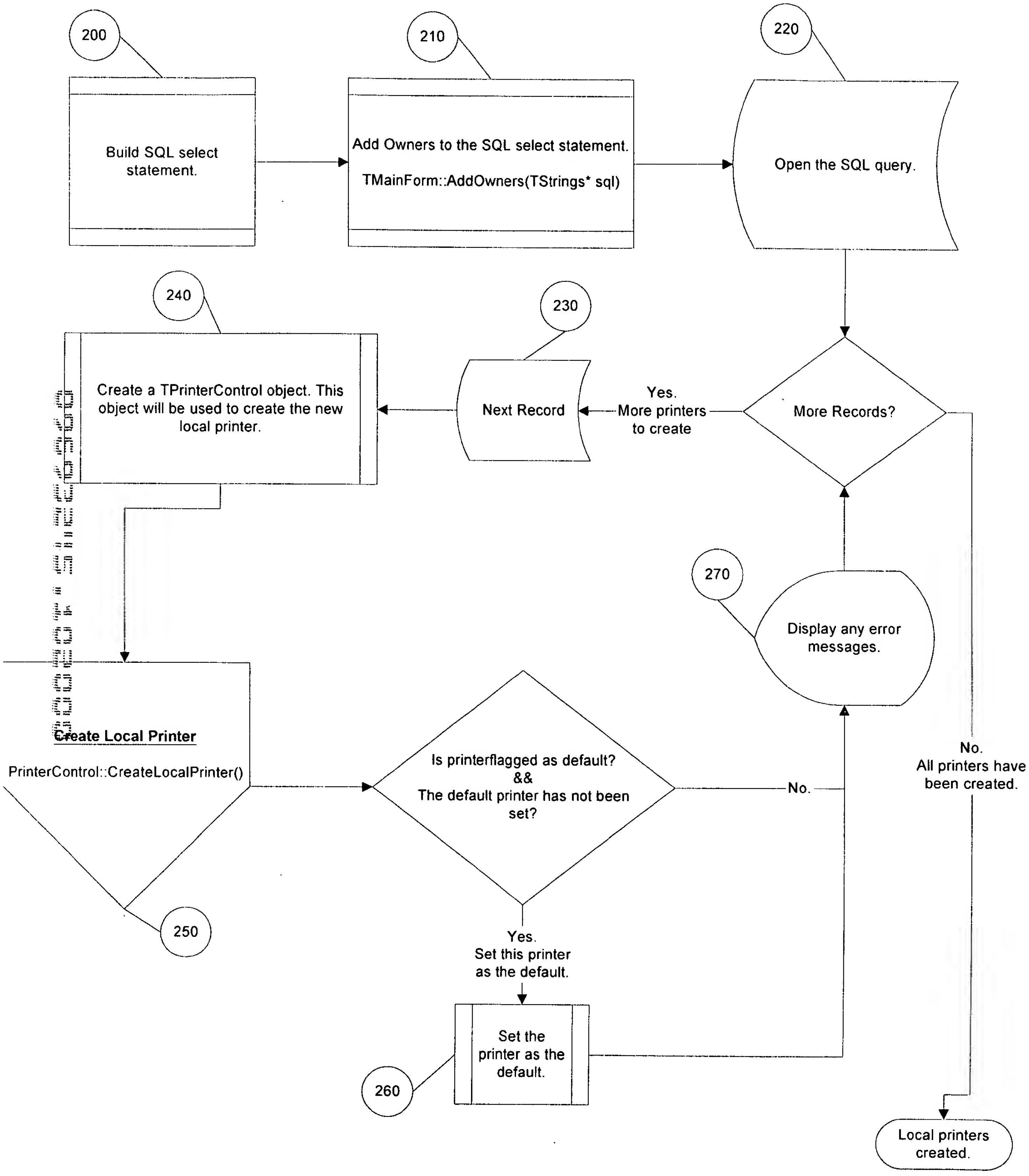


100
User logs on and PMP Client is launched.
110
Sleep for StartupDelay seconds.
Clear Network Printers?
No
Yes
130
Add Local Printers
TMainForm::AddLocalPrinters()
120
Clear network printers.
TMainForm::ClearNetworkPrinters()
140
Add Network Printers
TMainForm::AddNetworkPrinters()
150
Wait for WM_ENDSESSION message from Windows.
TMainForm::OnEndSession(TMessage Message)
160
Disconnect from network printers and delete local printers created by PMP.
TMainForm::CleanUp()
170
The user is logged off. PMP Client is closed.

Fig. 2

Add Local Printers

MainForm::AddLocalPrinters()

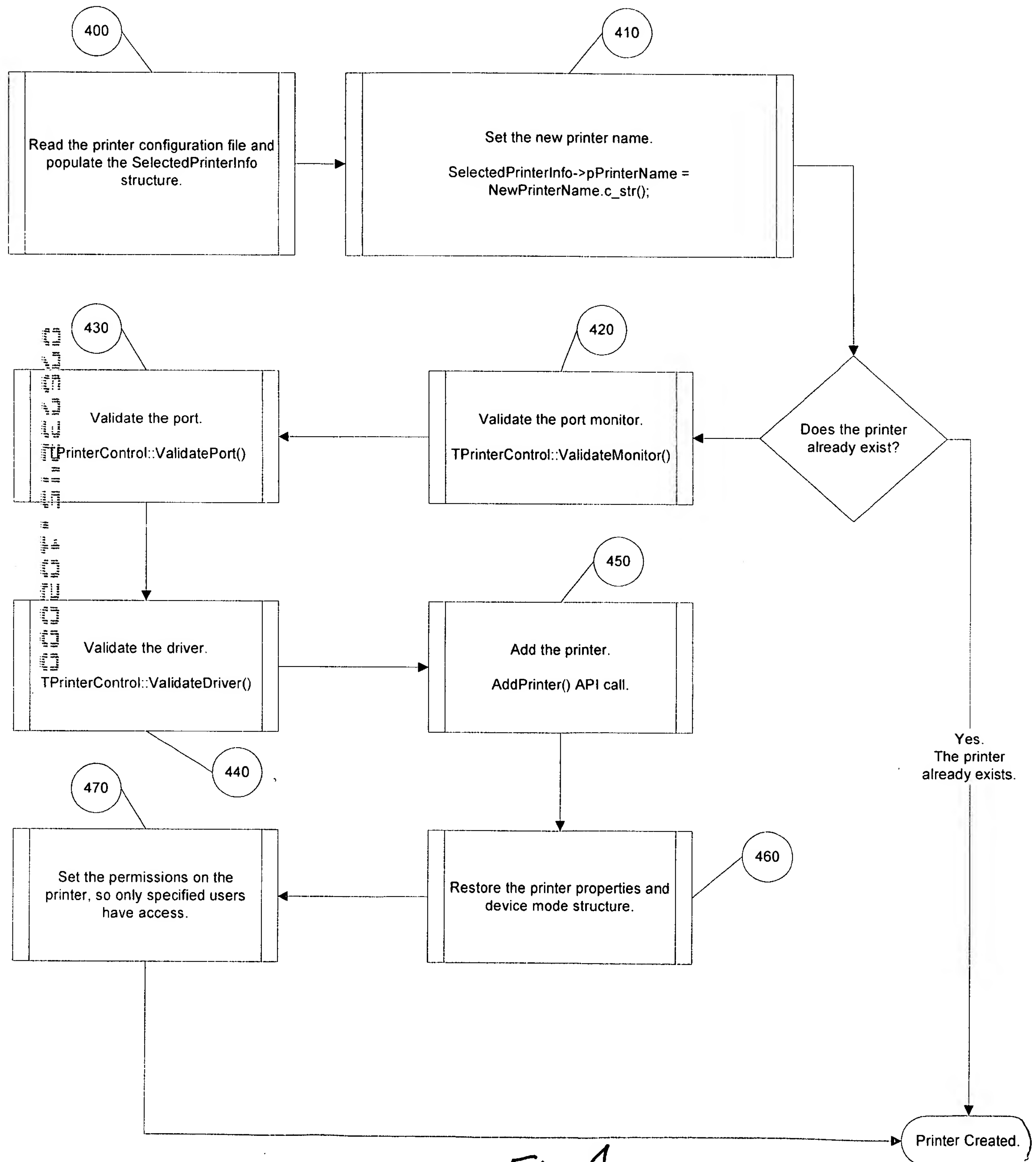


200
Build SQL select statement.
210
Add Owners to the SQL select statement.
TMainForm::AddOwners(TStrings* sql)
220
Open the SQL query.
240
Create a TPrinterControl object. This object will be used to create the new local printer.
230
Next Record
Yes. More printers to create
More Records?
270
Display any error messages.
Create Local Printer
PrinterControl::CreateLocalPrinter()
Is printerflagged as default? && The default printer has not been set?
No.
No. All printers have been created.
250
Yes. Set this printer as the default.
Set the printer as the default.
260
Local printers created.

Fig. 3

reate Local Printer

PrinterControl::CreateLocalPrinter()

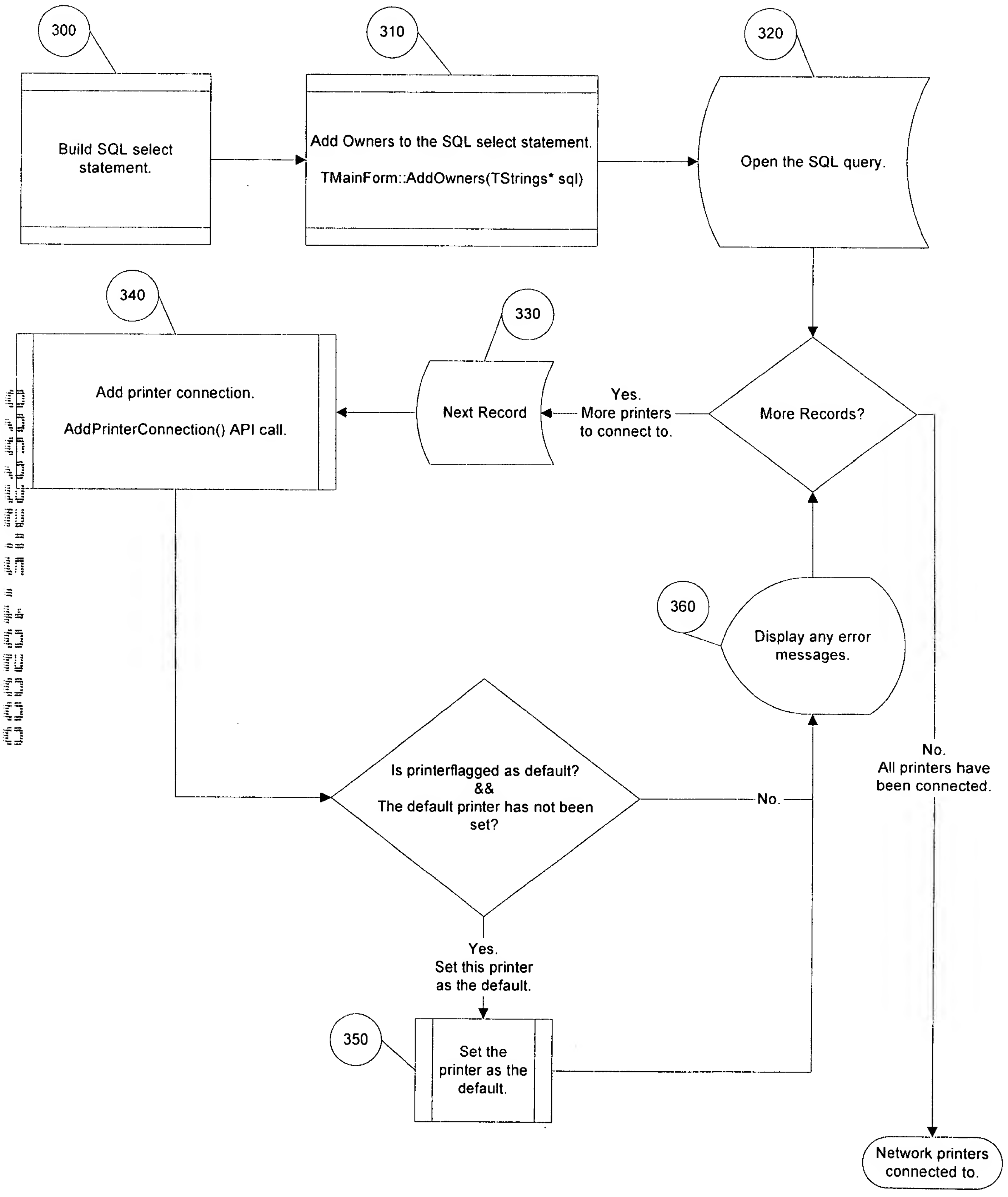


400
Read the printer configuration file and populate the SelectedPrinterInfo structure.
410
Set the new printer name.
SelectedPrinterInfo->pPrinterName = NewPrinterName.c_str();
Does the printer already exist?
Yes. The printer already exists.
420
Validate the port monitor.
TPrinterControl::ValidateMonitor()
430
Validate the port.
TPrinterControl::ValidatePort()
440
Validate the driver.
TPrinterControl::ValidateDriver()
450
Add the printer.
AddPrinter() API call.
460
Restore the printer properties and device mode structure.
470
Set the permissions on the printer, so only specified users have access.
Printer Created.

Fig. 4

Add Network Printers

MainForm::AddNetworkPrinters()



300
Build SQL select statement.
310
Add Owners to the SQL select statement.
TMainForm::AddOwners(TStrings* sql)
320
Open the SQL query.
More Records?
Yes. More printers to connect to.
330
Next Record
340
Add printer connection.
AddPrinterConnection() API call.
Is printerflagged as default? && The default printer has not been set?
Yes. Set this printer as the default.
350
Set the printer as the default.
No.
360
Display any error messages.
No. All printers have been connected.
Network printers connected to.

Fig. 5

Implementation CODE

```
MainUnit.h
//---------------------------------------------------------------------------
#ifndef MainUnitH
#define MainUnitH
//---------------------------------------------------------------------------
#include <Classes.hpp>
#include <Controls.hpp>
#include <StdCtrls.hpp>
#include <Forms.hpp>
#include <Dbtables.hpp>
#include <NetworkInfo.h>
#include <ShellApi.h>
#include <ExtCtrls.hpp>
#include <TriceratMessaging.h>
#include <DirTools.h>

//---------------------------------------------------------------------------
class TMainForm : public TForm
{
__published:    // IDE-managed Components
    TNetworkInfo *FNetworkInfo;
    TButton *CloseBtn;
    TTimer *IcaPrinterSecurity;
    TTimer *Initialize;
    void __fastcall CloseBtnClick(TObject *Sender);
    void __fastcall FormCreate(TObject *Sender);
    void __fastcall FormShow(TObject *Sender);
    void __fastcall InitializeTimer(TObject *Sender);
    void __fastcall FormHide(TObject *Sender);
    void __fastcall FormActivate(TObject *Sender);
    void __fastcall IcaPrinterSecurityTimer(TObject *Sender);
    void __fastcall FormClose(TObject *Sender, TCloseAction &Action);

private: // User declarations
    AnsiString PrinterInfoPath;
    TStringList *LocalPrinters;
    TStringList *NetworkPrinters;
    bool bClearNetworkPrinters;
    bool bSetIcaPrinterRights;
    bool DefaultPrinterSet;
    bool Initializing;
    int IcaPrinterRightsDelay;
    int StartupDelay;

    void __fastcall AddOwners(TStrings* sql);
    void __fastcall AddLocalPrinters();
    void __fastcall AddNetworkPrinters();
    void OnDesktopInit(TMessage Message);
    void ClearNetworkPrinters();
    void CleanUp();
    void OnQueryEndSession(TMessage Message);
    void OnEndSession(TMessage Message);
    bool GetPrinterRights(TStringList * Users);
```

FIG. 6.1

```
public:          // User declarat
   __fastcall TMainForm(TComponent* Owner);
   __fastcall ~TMainForm();
   int ProductID;
   AnsiString LogFile;
   TDirTools *DirTools;

protected:
   BEGIN_MESSAGE_MAP
      VCL_MESSAGE_HANDLER(TM_D2K_INIT, TMessage, OnDesktopInit)
      VCL_MESSAGE_HANDLER(WM_ENDSESSION, TMessage, OnEndSession)
   END_MESSAGE_MAP(TForm)
};
//---------------------------------------------------------------------------
extern PACKAGE TMainForm *MainForm;
//---------------------------------------------------------------------------
#endif



MainUnit.Cpp
#include <vcl.h>
#pragma hdrstop
//---------------------------------------------------------------------------


#include "MainUnit.h"
#include "NetworkInfo.h"
#include <PrinterControl.h>
#include <RegTools.h>
//---------------------------------------------------------------------------


#pragma package(smart_init)
#pragma link "NetworkInfo"
#pragma resource "*.dfm"
//---------------------------------------------------------------------------


TMainForm *MainForm;
//---------------------------------------------------------------------------
```

STEP 100

```
__fastcall TMainForm::TMainForm(TComponent* Owner)
   : TForm(Owner)
{
   Session->Active = false;
   LocalPrinters = new TStringList;
   NetworkPrinters = new TStringList;
   DefaultPrinterSet = false;
   Initializing = false;
}
//---------------------------------------------------------------------------
```

STEP 170

```
__fastcall TMainForm::~TMainForm()
{
```

FIG. 6.2

```
    delete LocalPrinters;
    delete NetworkPrinters;
    DirTools->WriteLog(LogFile, "Terminating PMP Client");
    delete DirTools;
}
//---------------------------------------------------------------------------


void __fastcall TMainForm::AddOwners(TStrings* sql)
{
    AnsiString ClientName;
    AnsiString ComputerName;
    ClientName = getenv("CLIENTNAME");
    if (!ClientName.IsEmpty())
        ClientName = ClientName.UpperCase();
    ComputerName = getenv("COMPUTERNAME");

    FNetworkInfo->Clear();

    sql->Add(" IN (SELECT ID FROM Owners WHERE Name = '" +
        FNetworkInfo->UserName + "'");

    if (FNetworkInfo->LocalComputerName != ("\\\\" + FNetworkInfo->DomainName))
        {
            FNetworkInfo->SourceServerName = FNetworkInfo->DomainControllerName;

            for (int i = 0; i < FNetworkInfo->MyGlobalGroupCount; i++)
                sql->Add(" OR Name = '" + FNetworkInfo->MyGlobalGroupNames[i] + "'");
        }

    FNetworkInfo->SourceServerName  = "";

    for (int i = 0; i < FNetworkInfo->MyLocalGroupCount; i++)
        sql->Add(" OR Name = '" + FNetworkInfo->MyLocalGroupNames[i] + "'");

    if (!ClientName.IsEmpty() && ClientName != ComputerName)
        sql->Add(" OR Name = '" + ClientName + "'");
    if (!ComputerName.IsEmpty())
        sql->Add(" OR Name = '" + ComputerName + "'");

    sql->Add(")");
}
//---------------------------------------------------------------------------
```

STEP 130

```
void __fastcall TMainForm::AddLocalPrinters()
{
    TQuery* query = new TQuery(NULL);
    int i;
    AnsiString SourceServer;
    AnsiString Monitor;
    AnsiString Port;
    AnsiString FileName;
    AnsiString PrinterName;
    AnsiString NewPrinterName;
    AnsiString ClientName;
    bool IsDefault;
```

FIG. 6.3

```
    TStringList *Messages = new [illegible]ngList();
    TStringList *Users = new TStringList();

    GetPrinterRights(Users);

    ClientName = getenv("CLIENTNAME");
    if (!ClientName.IsEmpty())
      ClientName = ClientName.UpperCase();
    else
      ClientName = FNetworkInfo->UserName;

    query->DatabaseName = "Tricerat PMP";

  STEP 200
    query->SQL->Add("SELECT o.Ordinal, a.Ordinal, p.FileName, p.Name, ");
    query->SQL->Add("p.Port, p.Monitor, p.SourceServer, a.IsDefault ");
    query->SQL->Add("FROM Owners o, AssignedLocalPrinters a, LocalPrinters p ");
    query->SQL->Add("WHERE o.ID = a.OwnerID AND a.LocalPrinterID = p.ID ");
    query->SQL->Add("AND p.Disabled = False ");
    query->SQL->Add("AND a.OwnerID ");

  STEP 210
    AddOwners(query->SQL);

    query->SQL->Add(" ORDER BY Ordinal");

    try
    {
  STEP 220
      query->Open();

  STEP 230
      i = -1;
      while (query->Active && !query->Eof && query->RecordCount > ++i)
      {
        //Add printers here.
        SourceServer = query->FieldByName("SourceServer")->AsString;
        Monitor = query->FieldByName("Monitor")->AsString;
        Port = query->FieldByName("Port")->AsString;
        FileName = query->FieldByName("FileName")->AsString;
        PrinterName = query->FieldByName("Name")->AsString;
        IsDefault = query->FieldByName("IsDefault")->AsBoolean;
        NewPrinterName = ClientName + "#" + PrinterName;

        try
        {
  STEP 240
          //Constructor to point to local computer for drivers.
          TPrinterControl *PrinterControl = new TPrinterControl(
            PrinterInfoPath, SourceServer);

          if (!Port.IsEmpty() && !Monitor.IsEmpty())
            PrinterControl->RemapPort(Port, Monitor);

  STEP 250
          //Create the temp printer.
          if (PrinterControl->CreateLocalPrinter(FileName, NewPrinterName, Users))
```

FIG. 6.4

```
            {
               LocalPrinters->Add(NewPrinterName);
               if (IsDefault && !DefaultPrinterSet)
               {
STEP 260
                  if (PrinterControl->SetDefaultPrinter(NewPrinterName))
                     DefaultPrinterSet = true;
               }
            }

            if (0 < PrinterControl->Messages->Count)
               Messages->Add(PrinterControl->Messages->Text);

            delete PrinterControl;
         }
         catch(...)
         {
            Messages->Add("Error Creating Printer \"" + NewPrinterName + "\"");
         }

         query->FindNext();

         Next();
      }

   }
   catch (...)
   {
   }

   query->Close();
   delete query;

   Users->Clear();
   delete Users;

STEP 270
   if (0 < Messages->Count)
   {
      MessageBox(NULL, Messages->Text.c_str(), "PMP CLient",
         MB_OK | MB_ICONERROR | MB_SYSTEMMODAL);
   }
}
//---------------------------------------------------------------------------

STEP 140
void __fastcall TMainForm::AddNetworkPrinters()
{
   TQuery* query = new TQuery(NULL);
   int i;
   AnsiString Map;
   AnsiString PrinterName;
   AnsiString FullShareName;
   AnsiString FullPrinterName;
   AnsiString Argument;
   bool IsDefault;
   DWORD dwError;
```

FIG. 6.5

```
    query->DatabaseName = "Tric[illegible]PMP";

STEP 300
    query->SQL->Add("SELECT o.Ordinal, a.Ordinal, p.Name, a.Map, a.IsDefault ");
    query->SQL->Add("FROM Owners o, AssignedNetworkPrinters a, NetworkPrinters p ");
    query->SQL->Add("WHERE o.ID = a.OwnerID AND a.NetworkPrinterID = p.ID ");
    query->SQL->Add("AND p.Disabled = False ");
    query->SQL->Add("AND a.OwnerID ");

STEP 310
    AddOwners(query->SQL);

    query->SQL->Add(" ORDER BY Ordinal");

    try
    {
      //Constructor to point to local computer for drivers.
      TPrinterControl *PrinterControl = new TPrinterControl(
        NULL, NULL);

STEP 320
      query->Open();

STEP 330
      i = -1;
      while (query->Active && !query->Eof && query->RecordCount > ++i)
      {
        //Add printers here.
        PrinterName = query->FieldByName("Name")->AsString;
        Map = query->FieldByName("Map")->AsString;
        IsDefault = query->FieldByName("IsDefault")->AsBoolean;

STEP 340
        if (!AddPrinterConnection(PrinterName.c_str()))
        {
          dwError = GetLastError();
          AnsiString Message;
          Message = "Unable to connect to printer " + PrinterName + " \n\n";
          Message = Message + "Error Code = " + String(dwError);

          query->FindNext();
          continue;
        }

        FullShareName = PrinterControl->GetPrinterShareName(PrinterName);
        FullPrinterName = PrinterControl->GetPrinterFullName(PrinterName);

        NetworkPrinters->Add(FullPrinterName);

STEP 350
        if (IsDefault && !DefaultPrinterSet)
        {
          if (!PrinterControl->SetDefaultPrinter(FullPrinterName))
            ShowMessage(PrinterControl->Messages->Text);

          DefaultPrinterSet = true;
        }
```

FIG. 6.6

```
        if(!Map.IsEmpty())
        {
          Argument = "use " + Map + " /d";
                              ShellExecute(NULL, "open", "net", Argument.c_str(),
            NULL, SW_HIDE);

          Argument = "use " + Map + " " + FullShareName;
                              ShellExecute(NULL, "open", "net", Argument.c_str(),
            NULL, SW_HIDE);

        }
```

STEP 360

```
        MessageBox(NULL, Message.c_str(), "PMPClient",
          MB_OK | MB_ICONERROR | MB_SYSTEMMODAL);

        query->FindNext();

        Next();
      }

      delete PrinterControl;
    }
    catch (...)
    {
    }

    query->Close();
    delete query;
}
//------------------------------------------------------------------------


void __fastcall TMainForm::CloseBtnClick(TObject *Sender)
{
    CleanUp();
}
//------------------------------------------------------------------------


void __fastcall TMainForm::FormCreate(TObject *Sender)
{
    FormHide(Sender);
}
//------------------------------------------------------------------------


void __fastcall TMainForm::FormShow(TObject *Sender)
{
    TRegistry *Reg = new TRegistry;
    LogFile = String(getenv("TEMP")) + "\\PMP.txt";
    DirTools = new TDirTools();

    ShowWindow(Application->Handle, SW_HIDE);

    Reg->RootKey = HKEY_LOCAL_MACHINE;
```

FIG. 6.7

```
if (Reg->OpenKey("Software\\[illegible]erat\\PMP", true))
{
  PrinterInfoPath = Reg->ReadString("PrinterInfo Path");

  try
  {
    bClearNetworkPrinters = Reg->ReadBool("ClearNetworkPrinters");
  }
  catch (...)
  {
    bClearNetworkPrinters = false;
    Reg->WriteBool("ClearNetworkPrinters", bClearNetworkPrinters);
  }

  try
  {
    bSetIcaPrinterRights = Reg->ReadBool("SetIcaPrinterRights");
  }
  catch (...)
  {
    bSetIcaPrinterRights = false;
    Reg->WriteBool("SetIcaPrinterRights", bSetIcaPrinterRights);
  }

  try
  {
    IcaPrinterRightsDelay = Reg->ReadInteger("IcaPrinterRightsDelay");
  }
  catch (...)
  {
    IcaPrinterRightsDelay = 15;
    Reg->WriteInteger("IcaPrinterRightsDelay", IcaPrinterRightsDelay);
  }

  try
  {
    StartupDelay = Reg->ReadInteger("StartupDelay");
  }
  catch (...)
  {
    StartupDelay = 30;
    Reg->WriteInteger("StartupDelay", StartupDelay);
  }


}
Reg->CloseKey();
Reg->Free();

if (PrinterInfoPath.IsEmpty())
{
  MessageBox(NULL, "Unable to Read Registry Values!", "PMPClient",
    MB_OK | MB_ICONERROR | MB_SYSTEMMODAL);
  Close();
}

if (5 < StartupDelay)
```

FIG. 6.8

```
        Initialize->Interval = Startu[illegible]y * 1000;
    else
        Initialize->Interval = 5000;

    DirTools->WriteLog(LogFile, "StartupDelay = "  + String(Initialize->Interval));

    STEP 110
    //This can be stopped if Desktop sends us a message.
    Initialize->Enabled = true;

    if (bSetIcaPrinterRights)
    {
        if (5 < IcaPrinterRightsDelay)
            IcaPrinterSecurity->Interval = IcaPrinterRightsDelay * 1000;
        else
            IcaPrinterSecurity->Interval = 5000;

        IcaPrinterSecurity->Enabled = true;
    }
}
//---------------------------------------------------------------------------

STEP 160
void TMainForm::CleanUp()
{
    int i;
    HWND hWnd;

    //Wait for RegSet.
    hWnd = (HWND)1;
    while (NULL != hWnd)
    {
        hWnd = FindWindow("TRegSetMainForm", NULL);

        if (NULL != hWnd)
        {
            SendMessage(hWnd, WM_CLOSE, NULL, NULL);
        }

        Sleep(100);
    }

    try
    {
        //Constructor to point to local computer for drivers.
        TPrinterControl *PrinterControl = new TPrinterControl(
            NULL, NULL);

        i = -1;
        while (LocalPrinters->Count > ++i)
        {
            PrinterControl->DeleteLocalPrinter(LocalPrinters->Strings[i]);
        }

        delete PrinterControl;

        i = -1;
```

FIG. 6.9

```
        while (NetworkPrinters->Co[illegible]> ++i)
        {
            DeletePrinterConnection(NetworkPrinters->Strings[i].c_str());
        }
    }
    catch(...)
    {
    }
}
//---------------------------------------------------------------------------
```

STEP 120

```
void TMainForm::ClearNetworkPrinters()
{
    try
    {
        //Constructor to point to local computer for drivers.
        TPrinterControl *PrinterControl = new TPrinterControl(
            NULL, NULL);

        PrinterControl->ClearNetworkPrinters();

        delete PrinterControl;
    }
    catch(...)
    {
    }
}
//---------------------------------------------------------------------------


void __fastcall TMainForm::InitializeTimer(TObject *Sender)
{
    Initialize->Enabled = false;
    Initializing = true;
    LogFile = String(getenv("TEMP")) + "\\PMP.txt";
    DirTools = new TDirTools();

    try
    {
        if (bClearNetworkPrinters)
        {
            DirTools->WriteLog(LogFile, "Clearing Network Printers");
            ClearNetworkPrinters();
        }

        Session->Active = true;

        DirTools->WriteLog(LogFile, "Add Local Printers");
        AddLocalPrinters();
        DirTools->WriteLog(LogFile, "Finished With Local Printers");

        DirTools->WriteLog(LogFile, "Add Network Printers");
        AddNetworkPrinters();
        DirTools->WriteLog(LogFile, "Finished With Network Printers");

        Session->Active = false;
```

FIG. 6.10

```
    }
    catch(...)
    {
    }

    Initializing = false;
}
//---------------------------------------------------------------------------


void __fastcall TMainForm::IcaPrinterSecurityTimer(TObject *Sender)
{
    IcaPrinterSecurity->Enabled = false;

    try
    {
        //Constructor to point to local computer for drivers.
        TPrinterControl *PrinterControl = new TPrinterControl(
            NULL, NULL);

        PrinterControl->SetIcaPrinterRights();

        delete PrinterControl;
    }
    catch(...)
    {
    }

}
//---------------------------------------------------------------------------


void __fastcall TMainForm::FormHide(TObject *Sender)
{
    ShowWindow(Application->Handle, SW_HIDE);
    BorderStyle = bsNone;
    Width = 0;
    Height = 0;
}
//---------------------------------------------------------------------------


void __fastcall TMainForm::FormActivate(TObject *Sender)
{
    ShowWindow(Application->Handle, SW_HIDE);
}
//---------------------------------------------------------------------------


void TMainForm::OnDesktopInit(TMessage Message)
{
    if(0 == Message.WParam)
    {
        DirTools->WriteLog(LogFile, "PMP Received Message Desktop is Initializing");
        while(Initializing)
        {
            Sleep(1000);
```

FIG. 6.11

```
    }
    Initialize->Enabled = false;
  }

  if(1 == Message.WParam)
  {
    DirTools->WriteLog(LogFile, "PMP Received Message From Desktop to Initialize");
    DefaultPrinterSet = false;
    Initialize->Enabled = false;
    Initialize->Interval = 1000;
    Initialize->Enabled = true;
  }
}
//-----------------------------------------------------------------------
```

STEP 150

```
void TMainForm::OnEndSession(TMessage Message)
{
  DirTools->WriteLog(LogFile, "PMP Cleanup In Progress");
  CleanUp();
  DirTools->WriteLog(LogFile, "PMP Cleanup Finished");
  Application->Terminate();
}
//-----------------------------------------------------------------------


void __fastcall TMainForm::FormClose(TObject *Sender, TCloseAction &Action)
{
  CleanUp();
}
//-----------------------------------------------------------------------


bool TMainForm::GetPrinterRights(TStringList * Users)
{
  TRegistry *Reg = new TRegistry();

  if(!Users)
    Users = new TStringList();

  Users->Clear();

  Reg->RootKey = HKEY_LOCAL_MACHINE;
  if(Reg->OpenKey("Software\\Tricerat\\PMP", true))
  {
    if(Reg->ValueExists("PrinterRights"))
    {
      try
      {
        AnsiString tempString;
        BYTE *pTemp = NULL;
        DWORD dwType = 0;
        DWORD dwSize = 0;
        int i = 0;

        RegQueryValueEx(Reg->CurrentKey, "PrinterRights",
```

FIG. 6.12

```
                NULL, &dwType, p[illegible]p, &dwSize);

            pTemp = (BYTE*)malloc(dwSize);
            ZeroMemory(pTemp, dwSize);

            RegQueryValueEx(Reg->CurrentKey, "PrinterRights",
                NULL, &dwType, pTemp, &dwSize);

            if (0 < dwSize)
            {
                i = -1;
                while ((int)dwSize > ++i)
                {
                    if ('\0' == (char)pTemp[i])
                    {
                        if (!tempString.IsEmpty())
                            Users->Add(tempString);

                        tempString = "";
                    }
                    else
                    {
                        tempString = tempString + (char)pTemp[i];
                    }
                }

                free(pTemp);
            }
        }
        catch(...)
        {
        }
    }
    else
    {
        RegSetValueEx(Reg->CurrentKey, "PrinterRights",
            NULL, REG_MULTI_SZ, NULL, 0);
    }
  }
  Reg->CloseKey();
  Reg->Free();

  return true;
}



PrinterControl.h
//---------------------------------------------------------------------------
#ifndef PrinterControlH
#define PrinterControlH
//---------------------------------------------------------------------------
#include <SysUtils.hpp>
#include <Controls.hpp>
#include <Classes.hpp>
#include <Forms.hpp>
#include <winspool.h>
```

FIG. 6.13

```
#include <stdio.h>
#include <iostream.h>
#include <fstream.h>
#include <StUtils.hpp>
#include <RegTools.h>
#include "..\\DDK\\Inc\\winsplp.h"

#define CONTROL_FULL          1
#define  TEMP_BUFFER_SIZE 128000

//---------------------------------------------------------------------------
class PACKAGE TPrinterControl : public TComponent
{
private:
   static AnsiString CleanupFilename(AnsiString Filename);

protected:

   PRINTER_INFO_2 *SelectedPrinterInfo;
   DWORD SelectedPrinterInfoSize;
   AnsiString PrtInfoPath;
   AnsiString PrinterName;
   AnsiString PortMonitorDescription;
   AnsiString NewPrinterName;
   AnsiString SourceServerName;
   AnsiString NewPortName;
   AnsiString NewPortMonitor;
   DWORD dwDevModeSize;

   DRIVER_INFO_3 *GetRemoteDriverInfo(AnsiString ServerName,
     AnsiString DriverName);
   TStringList *CopyDriverFiles(TStringList *SourceFiles);
   bool ValidateDriver(AnsiString DriverName);
   bool ValidatePort(AnsiString PortName, AnsiString PortMonitor);
   bool ValidateMonitor(AnsiString MonitorName);
   bool PrinterSetOwnerOnlyRights(AnsiString PrinterName);
   bool PrinterSetCurrentUserOnlyRights(AnsiString PrinterName);
   bool PrinterAddAccessRights(AnsiString PrinterName, AnsiString UserName, int nAccess);
   bool WritePrinterInfo(AnsiString FileToSaveTo);
   bool ReadPrinterInfo(AnsiString FileToReadFrom);
   bool SaveLocalPrinter();
   bool CreateLocalPrinter();
   bool SetDefaultPrinter();
   AnsiString GetIcaClientPort(AnsiString OldPort);
   AnsiString GetPortMonitor(AnsiString PortName);


public:
   __fastcall TPrinterControl(AnsiString PathToPrinterInfoFiles,
         AnsiString SourceServerNameForDrivers);
   __fastcall ~TPrinterControl();


   bool PrinterAddAccessRights(AnsiString PrinterName, TStringList *Users, int nAccess);
   bool SetDefaultPrinter(AnsiString PrinterToSetAsDefault);
   bool CreateLocalPrinter(AnsiString PrinterToCreate);
   bool CreateLocalPrinter(AnsiString PrinterToCreate,
```

FIG. 6.14

```
        AnsiString NewPrinterToCreate);
    bool CreateLocalPrinter(AnsiString PrinterToCreate,
        AnsiString NewPrinterToCreate, TStringList *Users);
    bool SaveLocalPrinter(AnsiString PrinterToSave, AnsiString SaveName);
    bool SaveLocalPrinter(AnsiString PrinterToSave);
    bool RemapPort(AnsiString Port, AnsiString Monitor);
    bool PrinterPropertiesDialog(AnsiString PrinterName, HANDLE hWnd);
    bool DeleteLocalPrinter(AnsiString PrinterName);
    static PRINTER_INFO_2 *GetPrinterInfo2(AnsiString PrinterName);
    AnsiString GetStatusString(DWORD dwStatus);
    TStringList *GetLocalDrivers();
    TStringList *GetLocalPrinters();
    TStringList *GetNetworkPrinters();
    TStringList *GetLocalMonitors();
    TStringList *GetLocalPorts();
    TStringList *GetConfigFileList();
    TStringList *LoadPrinterInfoFromFile(AnsiString PrinterName);
    AnsiString GetDefaultPrinter();

    TStringList *Messages;
    bool DeletePrinterConfig(AnsiString PrinterConfigName);
    AnsiString GetPrinterShareName(AnsiString PrinterName);
    AnsiString GetPrinterFullName(AnsiString PrinterName);
    bool ClearNetworkPrinters();
    bool SetIcaPrinterRights();
    bool CopyConfiguration(AnsiString Source, AnsiString Destination);
    bool SaveLocalDriver(AnsiString DriverName);

__published:
};
//---------------------------------------------------------------------------
#endif

PrinterControl.Cpp
//---------------------------------------------------------------------------
#include <vcl.h>
#pragma hdrstop
#pragma warn -aus

#include "PrinterControl.h"
#pragma package(smart_init)

typedef bool (*ADDPORTEX)(LPWSTR, DWORD, LPBYTE, LPWSTR);

//---------------------------------------------------------------------------
// ValidCtrCheck is used to assure that the components created do not have
// any pure virtual functions.
//

static inline void ValidCtrCheck(TPrinterControl *)
{
  new TPrinterControl(NULL, NULL);
}
//---------------------------------------------------------------------------


__fastcall TPrinterControl::TPrinterControl(AnsiString PathToPrinterInfoFiles,
```

FIG. 6.15

```
    AnsiString SourceServerNameForDrivers)
   : TComponent(NULL)
  {
    SelectedPrinterInfo = new PRINTER_INFO_2;
    ZeroMemory(SelectedPrinterInfo, sizeof(*SelectedPrinterInfo));

    PrtInfoPath = PathToPrinterInfoFiles;

    if (SourceServerNameForDrivers.IsEmpty())
    {
      SourceServerName = "\\\\";
      SourceServerName = SourceServerName + getenv("COMPUTERNAME");
    }
    else if (0 == SourceServerNameForDrivers.SubString(0, 2).AnsiCompareIC("\\\\"))
    {
      SourceServerName = "\\\\" + SourceServerNameForDrivers;
    }
    else
    {
      SourceServerName = SourceServerNameForDrivers;
    }

    Messages = new TStringList;
  }

  __fastcall TPrinterControl::~TPrinterControl()
  {
    if (SelectedPrinterInfo)
      free(SelectedPrinterInfo);
    SelectedPrinterInfo = NULL;
    Messages->Free();
  }

  //-----------------------------------------------------------------------
  namespace Printercontrol
  {
    void __fastcall PACKAGE Register()
    {
      TComponentClass classes[1] = {__classid(TPrinterControl)};
      RegisterComponents("Tricerat", classes, 0);
    }
  }
  //-----------------------------------------------------------------------

  TStringList *TPrinterControl::GetLocalDrivers()
  {
    TStringList *LocalDriverList = new TStringList;
    DRIVER_INFO_3 *InstalledDriverInfo = new DRIVER_INFO_3;
    DWORD InstalledDriverInfoReturned;
    DWORD dwSize;
    DWORD dwNeeded;
    int i;

    EnumPrinterDrivers(NULL, NULL, 3, (unsigned char*)InstalledDriverInfo,
      0, &dwSize, &InstalledDriverInfoReturned);

    InstalledDriverInfo = (DRIVER_INFO_3*)malloc(dwSize);
```

FIG. 6.16

```
  ZeroMemory(InstalledDriverI[illegible]wSize);

  if (!EnumPrinterDrivers(NULL, NULL, 3, (unsigned char*)InstalledDriverInfo,
     dwSize, &dwNeeded, &InstalledDriverInfoReturned))
  {

     Messages->Add("EnumPrinterDrivers() Failed!");
  }

  i = -1;
  LocalDriverList->Clear();
  while ((int)InstalledDriverInfoReturned > ++i)
    LocalDriverList->Add(InstalledDriverInfo[i].pName);

  free(InstalledDriverInfo);
  return LocalDriverList;
}

TStringList *TPrinterControl::GetLocalPrinters()
{
  TStringList *LocalPrinterList = new TStringList;
  PRINTER_INFO_2 *InstalledPrinterInfo = new PRINTER_INFO_2;
  DWORD InstalledPrinterInfoReturned;
  DWORD dwSize;
  DWORD dwNeeded;
  int i;

  EnumPrinters(PRINTER_ENUM_LOCAL, NULL, 2,(BYTE*)InstalledPrinterInfo,
    0, &dwSize, &InstalledPrinterInfoReturned);

  InstalledPrinterInfo = (PRINTER_INFO_2*)malloc(dwSize);
    ZeroMemory(InstalledPrinterInfo, dwSize);

  if (!EnumPrinters(PRINTER_ENUM_LOCAL, NULL, 2,(BYTE*)InstalledPrinterInfo,
   dwSize, &dwNeeded, &InstalledPrinterInfoReturned))
  {
     Messages->Add("EnumPrinters() Failed!");
  }

  i = -1;
  LocalPrinterList->Clear();
  while ((int)InstalledPrinterInfoReturned > ++i)
    LocalPrinterList->Add(InstalledPrinterInfo[i].pPrinterName);

  free(InstalledPrinterInfo);
  return LocalPrinterList;
}

TStringList *TPrinterControl::GetNetworkPrinters()
{
  TStringList *NetworkPrinterList = new TStringList;
  PRINTER_INFO_2 *InstalledPrinterInfo = new PRINTER_INFO_2;
  DWORD InstalledPrinterInfoReturned;
  DWORD dwSize;
  DWORD dwNeeded;
  int i;
```

FIG. 6.17

```
  EnumPrinters(PRINTER_ENUM_CONNECTIONS, NULL, 2,(BYTE*)InstalledPrinterInfo,
    0, &dwSize, &InstalledPrinterInfoReturned);

  InstalledPrinterInfo = (PRINTER_INFO_2*)malloc(dwSize);
    ZeroMemory(InstalledPrinterInfo, dwSize);

  if (!EnumPrinters(PRINTER_ENUM_CONNECTIONS, NULL, 2,(BYTE*)InstalledPrinterInfo,
   dwSize, &dwNeeded, &InstalledPrinterInfoReturned))
  {
     Messages->Add("EnumPrinters() Failed!");
  }

  i = -1;
  NetworkPrinterList->Clear();
  while ((int)InstalledPrinterInfoReturned > ++i)
    NetworkPrinterList->Add(InstalledPrinterInfo[i].pPrinterName);

  free(InstalledPrinterInfo);
  return NetworkPrinterList;
}

AnsiString TPrinterControl::GetDefaultPrinter()
{
  char szPrinter[256];
  AnsiString DefaultPrinter;
  int nDelim;

  GetProfileString ("windows", "device", "", szPrinter, sizeof(szPrinter));
  DefaultPrinter = szPrinter;

  nDelim = DefaultPrinter.Pos(",");

  DefaultPrinter = DefaultPrinter.SubString(1, nDelim - 1);

  return DefaultPrinter;
}

TStringList *TPrinterControl::GetLocalMonitors()
{
   MONITOR_INFO_2 *pLocalMonitors = new MONITOR_INFO_2;
   TStringList *LocalMonitors = new TStringList;
   DWORD dwSize;
   DWORD dwBytesNeeded;
   DWORD dwReturned;
   int i;

   //Get the memory needed.
   EnumMonitors(NULL, 2, NULL, 0, &dwSize, &dwReturned);
   pLocalMonitors = (MONITOR_INFO_2*)malloc(dwSize);


   if (!EnumMonitors(NULL, 2, (unsigned char*)pLocalMonitors, dwSize, &dwBytesNeeded,
      &dwReturned))
   {
     Messages->Add("EnumMonitors() Failed!");
   }
```

FIG. 6.18

```
    i = -1;
    while ((int)dwReturned > ++i)
      LocalMonitors->Add(pLocalMonitors[i].pName);


    free(pLocalMonitors);

    return LocalMonitors;
  }

  TStringList *TPrinterControl::GetLocalPorts()
  {
    PORT_INFO_1 *pLocalPorts = new PORT_INFO_1;
    TStringList *LocalPorts = new TStringList;
    DWORD dwSize;
    DWORD dwReturned;
    DWORD dwBytesNeeded;
    int i;

    EnumPorts(NULL, 1, (unsigned char*)pLocalPorts, 0, &dwSize, &dwReturned);
    pLocalPorts = (PORT_INFO_1*)malloc(dwSize);

    if (!EnumPorts(NULL, 1, (unsigned char*)pLocalPorts, dwSize, &dwBytesNeeded,
      &dwReturned))
    {
      Messages->Add("EnumPorts() Failed!");
    }

    i = -1;
    while ((int)dwReturned > ++i)
      LocalPorts->Add(pLocalPorts[i].pName);

    free(pLocalPorts);

    return LocalPorts;
  }

  AnsiString TPrinterControl::GetPortMonitor(AnsiString PortName)
  {
    PORT_INFO_2 *pPortInfo = new PORT_INFO_2;
    DWORD dwBytesNeeded;
    DWORD dwSize;
    DWORD dwReturned;
    int i;
    AnsiString MonitorName;
    AnsiString LprPortPath;
    TRegistry *Reg = new TRegistry;

    EnumPorts(NULL, 2, (unsigned char*)pPortInfo, 0, &dwSize, &dwReturned);

    pPortInfo = (PORT_INFO_2*)malloc(dwSize);

    if (!EnumPorts(NULL, 2, (unsigned char*)pPortInfo, dwSize, &dwBytesNeeded,
      &dwReturned))
    {
      Messages->Add("EnumPorts() Failed!");
    }
```

FIG. 6.19

```
    i = -1;
    while ((int)dwReturned > ++i)
    {
      if (0 == stricmp(PortName.c_str(), pPortInfo[i].pPortName))
        MonitorName = pPortInfo[i].pDescription;
    }

    free(pPortInfo);

    if (MonitorName.IsEmpty())
    {
      //Check for LPR Port.
      Reg->RootKey = HKEY_LOCAL_MACHINE;

      LprPortPath = "SYSTEM\\CurrentControlSet\\Control\\Print\\";
      LprPortPath = LprPortPath + "Monitors\\LPR Port\\Ports\\";
      LprPortPath = LprPortPath + PortName;

      if (Reg->OpenKey(LprPortPath, false))
        MonitorName = "LPR Port";
    }

    Reg->CloseKey();

    return MonitorName;
  }


  bool TPrinterControl::SetDefaultPrinter(AnsiString PrinterToSetAsDefault)
  {
    PrinterName = PrinterToSetAsDefault;
    if (!SetDefaultPrinter())
    {
      Messages->Add("SetDefaultPrinter() Failed!");
      return false;
    }

    return true;
  }

  bool TPrinterControl::SetDefaultPrinter()
  {
          HANDLE hPrinter;
          DWORD dwNeeded, dwReturned;
          PRINTER_INFO_2* pPrtInfo;
          char szTemp[256];
    AnsiString szPort;

          //Open handle to printer.
          if(!OpenPrinter(PrinterName.c_str(),&hPrinter,NULL))
    {
      Messages->Add("OpenPrinter() Failed!");
      return false;
    }


          //Select the default printer.
```

FIG. 6.20

```
        if(NULL!=hPrinter){

                // Get the buffer size needed
                GetPrinter(hPrinter,2,NULL,0,&dwNeeded);

                pPrtInfo=(PRINTER_INFO_2*)malloc(dwNeeded);
    ZeroMemory(pPrtInfo, dwNeeded);

                //get the printer info
                GetPrinter(hPrinter,2,(unsigned char*)pPrtInfo,dwNeeded,&dwReturned);

                szPort=pPrtInfo->pPortName;

                //Set the default printer.
    sprintf(szTemp,"%s,WINSPOOL,%s", PrinterName.c_str(), szPort.c_str());
    WriteProfileString("windows","device",szTemp);
                SendNotifyMessage(HWND_BROADCAST, WM_WININICHANGE, 0, 0L);

                //Close the handle to the printer.
                ClosePrinter(hPrinter);
        }

  free(pPrtInfo);

  return true;
}


bool TPrinterControl::WritePrinterInfo(AnsiString FileToSaveTo)
{
  HANDLE hFile;
  DWORD dwBytesWritten;
  DWORD dwServerNameSize,
     dwPrinterNameSize,
     dwShareNameSize,
     dwPortNameSize,
     dwDriverNameSize,
     dwCommentSize,
     dwLocationSize,
     dwSepFileSize,
     dwPrintProcessorSize,
     dwDatatypeSize,
     dwParametersSize,
     dwPortMonitorSize;

  hFile = CreateFile(FileToSaveTo.c_str(), GENERIC_WRITE, NULL, NULL,
    CREATE_ALWAYS, FILE_ATTRIBUTE_NORMAL, NULL);

  if(NULL == hFile)
  {
    Messages->Add("CreateFile() Failed!");
    return false;
  }

  PortMonitorDescription = GetPortMonitor(SelectedPrinterInfo->pPortName);

  //Set the port to Local if not recognized.
```

FIG. 6.21

```
 if (PortMonitorDescription.IsE[illegible]y())
 {
   PortMonitorDescription = "Local Port";
   SelectedPrinterInfo->pPortName = "LPT1:";
 }

SetFilePointer(hFile, 0, 0, FILE_BEGIN);

//dwServerNameSize
if (NULL == SelectedPrinterInfo->pServerName)
  dwServerNameSize = 0;
else
  dwServerNameSize = strlen(SelectedPrinterInfo->pServerName);

//dwPrinterNameSize
if (NULL == SelectedPrinterInfo->pPrinterName)
  dwPrinterNameSize = 0;
else
  dwPrinterNameSize = strlen(SelectedPrinterInfo->pPrinterName);

//dwShareNameSize
if (NULL == SelectedPrinterInfo->pShareName)
  dwShareNameSize = 0;
else
  dwShareNameSize = strlen(SelectedPrinterInfo->pShareName);

//dwPortNameSize
if (NULL == SelectedPrinterInfo->pPortName)
  dwPortNameSize = 0;
else
  dwPortNameSize = strlen(SelectedPrinterInfo->pPortName);

//dwDriverNameSize
if (NULL == SelectedPrinterInfo->pDriverName)
  dwDriverNameSize = 0;
else
  dwDriverNameSize = strlen(SelectedPrinterInfo->pDriverName);

//dwCommentSize
if (NULL == SelectedPrinterInfo->pComment)
  dwCommentSize = 0;
else
  dwCommentSize = strlen(SelectedPrinterInfo->pComment);

//dwLocationSize
if (NULL == SelectedPrinterInfo->pLocation)
  dwLocationSize = 0;
else
  dwLocationSize = strlen(SelectedPrinterInfo->pLocation);

//dwSepFileSize
if (NULL == SelectedPrinterInfo->pSepFile)
  dwSepFileSize = 0;
else
  dwSepFileSize = strlen(SelectedPrinterInfo->pSepFile);

//dwPrintProcessorSize
```

FIG. 6.22

```
if (NULL == SelectedPrinterIn[illegible]pPrintProcessor)
  dwPrintProcessorSize = 0;
else
  dwPrintProcessorSize = strlen(SelectedPrinterInfo->pPrintProcessor);

//dwDatatypeSize
if (NULL == SelectedPrinterInfo->pDatatype)
  dwDatatypeSize = 0;
else
  dwDatatypeSize = strlen(SelectedPrinterInfo->pDatatype);

//dwParametersSize
if (NULL == SelectedPrinterInfo->pParameters)
  dwParametersSize = 0;
else
dwParametersSize = strlen(SelectedPrinterInfo->pParameters);

//dwPortMonitorSize
if (PortMonitorDescription.IsEmpty())
  dwPortMonitorSize = 0;
else
dwPortMonitorSize = strlen(PortMonitorDescription.c_str());


//Increment the sizes to account for null terminators.
dwServerNameSize++;
dwPrinterNameSize++;
dwShareNameSize++;
dwPortNameSize++;
dwDriverNameSize++;
dwCommentSize++;
dwLocationSize++;
dwSepFileSize++;
dwPrintProcessorSize++;
dwDatatypeSize++;
dwParametersSize++;
dwPortMonitorSize++;

//Write the header.

//dwSelectedPrinterInfoSize
WriteFile(hFile, (char*)&SelectedPrinterInfoSize,
  sizeof(DWORD), &dwBytesWritten, NULL);

//dwServerNameSize
WriteFile(hFile, (char*)&dwServerNameSize,
  sizeof(DWORD), &dwBytesWritten, NULL);

//dwPrinterNameSize
WriteFile(hFile, (char*)&dwPrinterNameSize,
  sizeof(DWORD), &dwBytesWritten, NULL);

//dwShareNameSize
WriteFile(hFile, (char*)&dwShareNameSize,
  sizeof(DWORD), &dwBytesWritten, NULL);

//dwPortNameSize
```

FIG. 6.23

```
WriteFile(hFile, (char*)&dwPo[illegible]ameSize,
  sizeof(DWORD), &dwBytesWritten, NULL);

//dwDriverNameSize
WriteFile(hFile, (char*)&dwDriverNameSize,
  sizeof(DWORD), &dwBytesWritten, NULL);

//dwCommentSize
WriteFile(hFile, (char*)&dwCommentSize,
  sizeof(DWORD), &dwBytesWritten, NULL);

//dwLocationSize
WriteFile(hFile, (char*)&dwLocationSize,
  sizeof(DWORD), &dwBytesWritten, NULL);

//dwSepFileSize
WriteFile(hFile, (char*)&dwSepFileSize,
  sizeof(DWORD), &dwBytesWritten, NULL);

//dwPrintProcessorSize
WriteFile(hFile, (char*)&dwPrintProcessorSize,
  sizeof(DWORD), &dwBytesWritten, NULL);

//dwDatatypeSize
WriteFile(hFile, (char*)&dwDatatypeSize,
  sizeof(DWORD), &dwBytesWritten, NULL);

//dwParametersSize
WriteFile(hFile, (char*)&dwParametersSize,
  sizeof(DWORD), &dwBytesWritten, NULL);

//dwPortMonitorSize
WriteFile(hFile, (char*)&dwPortMonitorSize,
  sizeof(DWORD), &dwBytesWritten, NULL);

//Write the data.

//pServerName
if (NULL ==  SelectedPrinterInfo->pServerName)
  WriteFile(hFile, (char*)"",
    dwServerNameSize, &dwBytesWritten, NULL);
else
  WriteFile(hFile, (char*)SelectedPrinterInfo->pServerName,
    dwServerNameSize, &dwBytesWritten, NULL);

//pPrinterName
if (NULL ==  SelectedPrinterInfo->pPrinterName)
  WriteFile(hFile, (char*)"",
    dwPrinterNameSize, &dwBytesWritten, NULL);
else
  WriteFile(hFile, (char*)SelectedPrinterInfo->pPrinterName,
    dwPrinterNameSize, &dwBytesWritten, NULL);

//pShareName
if (NULL == SelectedPrinterInfo->pShareName)
  WriteFile(hFile, (char*)"",
    dwShareNameSize, &dwBytesWritten, NULL);
```

FIG. 6.24

```
else
  WriteFile(hFile, (char*)SelectedPrinterInfo->pShareName,
    dwShareNameSize, &dwBytesWritten, NULL);

//pPortName
if (NULL == SelectedPrinterInfo->pPortName)
  WriteFile(hFile, (char*)"",
    dwPortNameSize, &dwBytesWritten, NULL);
else
  WriteFile(hFile, (char*)SelectedPrinterInfo->pPortName,
    dwPortNameSize, &dwBytesWritten, NULL);

//pDriverName
if (NULL == SelectedPrinterInfo->pDriverName)
  WriteFile(hFile, (char*)"",
    dwDriverNameSize, &dwBytesWritten, NULL);
else
  WriteFile(hFile, (char*)SelectedPrinterInfo->pDriverName,
    dwDriverNameSize, &dwBytesWritten, NULL);

//pComment
if (NULL == SelectedPrinterInfo->pComment)
  WriteFile(hFile, (char*)"",
    dwCommentSize, &dwBytesWritten, NULL);
else
  WriteFile(hFile, (char*)SelectedPrinterInfo->pComment,
    dwCommentSize, &dwBytesWritten, NULL);

//pLocation
if (NULL == SelectedPrinterInfo->pLocation)
  WriteFile(hFile, (char*)"",
    dwLocationSize, &dwBytesWritten, NULL);
else
  WriteFile(hFile, (char*)SelectedPrinterInfo->pLocation,
    dwLocationSize, &dwBytesWritten, NULL);

//pSepFile
if (NULL == SelectedPrinterInfo->pSepFile)
  WriteFile(hFile, (char*)"",
    dwSepFileSize, &dwBytesWritten, NULL);
else
  WriteFile(hFile, (char*)SelectedPrinterInfo->pSepFile,
    dwSepFileSize, &dwBytesWritten, NULL);

//pPrintProcessor
if (NULL == SelectedPrinterInfo->pPrintProcessor)
  WriteFile(hFile, (char*)"",
    dwPrintProcessorSize, &dwBytesWritten, NULL);
else
  WriteFile(hFile, (char*)SelectedPrinterInfo->pPrintProcessor,
    dwPrintProcessorSize, &dwBytesWritten, NULL);

//pDatatype
if (NULL == SelectedPrinterInfo->pDatatype)
  WriteFile(hFile, (char*)"",
    dwDatatypeSize, &dwBytesWritten, NULL);
else
```

FIG. 6.25

```
  WriteFile(hFile, (char*)SelectedPrinterInfo->pDatatype,
    dwDatatypeSize, &dwBytesWritten, NULL);

//pParameters
if (NULL == SelectedPrinterInfo->pParameters)
  WriteFile(hFile, (char*)"",
    dwParametersSize, &dwBytesWritten, NULL);
else
  WriteFile(hFile, (char*)SelectedPrinterInfo->pParameters,
    dwParametersSize, &dwBytesWritten, NULL);

//pPortMonitorName
if (PortMonitorDescription.IsEmpty())
  WriteFile(hFile, (char*)"",
    dwPortMonitorSize, &dwBytesWritten, NULL);
else
  WriteFile(hFile, (char*)PortMonitorDescription.c_str(),
    dwPortMonitorSize, &dwBytesWritten, NULL);

//Attributes
WriteFile(hFile, (CHAR*)&SelectedPrinterInfo->Attributes,
  sizeof(DWORD), &dwBytesWritten, NULL);

//Priority
WriteFile(hFile, (char*)&SelectedPrinterInfo->Priority,
  sizeof(DWORD), &dwBytesWritten, NULL);

//DefaultPriority
WriteFile(hFile, (char*)&SelectedPrinterInfo->DefaultPriority,
  sizeof(DWORD), &dwBytesWritten, NULL);

//StartTime
WriteFile(hFile, (char*)&SelectedPrinterInfo->StartTime,
  sizeof(DWORD), &dwBytesWritten, NULL);

//UntilTime
WriteFile(hFile, (char*)&SelectedPrinterInfo->UntilTime,
  sizeof(DWORD), &dwBytesWritten, NULL);

//Status
WriteFile(hFile, (char*)&SelectedPrinterInfo->Status,
  sizeof(DWORD), &dwBytesWritten, NULL);

//cJobs
WriteFile(hFile, (char*)&SelectedPrinterInfo->cJobs,
  sizeof(DWORD), &dwBytesWritten, NULL);

//AveragePPM
WriteFile(hFile, (char*)&SelectedPrinterInfo->AveragePPM,
  sizeof(DWORD), &dwBytesWritten, NULL);

//Now write the DevMode structure.

//Entire structure size.
WriteFile(hFile, (char*)&dwDevModeSize,
  sizeof(DWORD), &dwBytesWritten, NULL);
```

FIG. 6.26

```
//dmSize
WriteFile(hFile, (char*)&SelectedPrinterInfo->pDevMode->dmSize,
  sizeof(WORD), &dwBytesWritten, NULL);

//dmDeviceName[32]
WriteFile(hFile, (char*)SelectedPrinterInfo->pDevMode->dmDeviceName,
  CCHDEVICENAME, &dwBytesWritten, NULL);

//dmSpecVersion
WriteFile(hFile, (char*)&SelectedPrinterInfo->pDevMode->dmSpecVersion,
  sizeof(WORD), &dwBytesWritten, NULL);

//dmDriverVersion
WriteFile(hFile, (char*)&SelectedPrinterInfo->pDevMode->dmDriverVersion,
  sizeof(WORD), &dwBytesWritten, NULL);

//dmDriverExtra
WriteFile(hFile, (char*)&SelectedPrinterInfo->pDevMode->dmDriverExtra,
  sizeof(WORD), &dwBytesWritten, NULL);

//dmFields
WriteFile(hFile, (char*)&SelectedPrinterInfo->pDevMode->dmFields,
  sizeof(DWORD), &dwBytesWritten, NULL);

//dmOrientation
WriteFile(hFile, (char*)&SelectedPrinterInfo->pDevMode->dmOrientation,
  sizeof(short), &dwBytesWritten, NULL);

//dmPaperSize
WriteFile(hFile, (char*)&SelectedPrinterInfo->pDevMode->dmPaperSize,
  sizeof(short), &dwBytesWritten, NULL);

//dmPaperLength
WriteFile(hFile, (char*)&SelectedPrinterInfo->pDevMode->dmPaperLength,
  sizeof(short), &dwBytesWritten, NULL);

//dmPaperWidth
WriteFile(hFile, (char*)&SelectedPrinterInfo->pDevMode->dmPaperWidth,
  sizeof(short), &dwBytesWritten, NULL);

//dmScale
WriteFile(hFile, (char*)&SelectedPrinterInfo->pDevMode->dmScale,
  sizeof(short), &dwBytesWritten, NULL);

//dmCopies
WriteFile(hFile, (char*)&SelectedPrinterInfo->pDevMode->dmCopies,
  sizeof(short), &dwBytesWritten, NULL);

//dmDefaultSource
WriteFile(hFile, (char*)&SelectedPrinterInfo->pDevMode->dmDefaultSource,
  sizeof(short), &dwBytesWritten, NULL);

//dmPrintQuality
WriteFile(hFile, (char*)&SelectedPrinterInfo->pDevMode->dmPrintQuality,
  sizeof(short), &dwBytesWritten, NULL);

//dmColor
```

FIG. 6.27

```
  WriteFile(hFile, (char*)&Sele[illegible]rinterInfo->pDevMode->dmColor,
    sizeof(short), &dwBytesWritten, NULL);

  //dmDuplex
  WriteFile(hFile, (char*)&SelectedPrinterInfo->pDevMode->dmDuplex,
    sizeof(short), &dwBytesWritten, NULL);

  //dmYResolution
  WriteFile(hFile, (char*)&SelectedPrinterInfo->pDevMode->dmYResolution,
    sizeof(short), &dwBytesWritten, NULL);

  //dmTTOption
  WriteFile(hFile, (char*)&SelectedPrinterInfo->pDevMode->dmTTOption,
    sizeof(short), &dwBytesWritten, NULL);

  //dmCollate
  WriteFile(hFile, (char*)&SelectedPrinterInfo->pDevMode->dmCollate,
    sizeof(short), &dwBytesWritten, NULL);

  //dmFormName[32]
  WriteFile(hFile, (char*)SelectedPrinterInfo->pDevMode->dmFormName,
    CCHFORMNAME, &dwBytesWritten, NULL);

  //dmBitsPerPel
  WriteFile(hFile, (char*)&SelectedPrinterInfo->pDevMode->dmBitsPerPel,
    sizeof(USHORT), &dwBytesWritten, NULL);

  //dmPelsWidth
  WriteFile(hFile, (char*)&SelectedPrinterInfo->pDevMode->dmPelsWidth,
    sizeof(DWORD), &dwBytesWritten, NULL);

  //dmPelsHeight
  WriteFile(hFile, (char*)&SelectedPrinterInfo->pDevMode->dmPelsHeight,
    sizeof(DWORD), &dwBytesWritten, NULL);

  //dmDisplayFlags
  WriteFile(hFile, (char*)&SelectedPrinterInfo->pDevMode->dmDisplayFlags,
    sizeof(DWORD), &dwBytesWritten, NULL);

  //dmDisplayFrequency
  WriteFile(hFile, (char*)&SelectedPrinterInfo->pDevMode->dmDisplayFrequency,
    sizeof(DWORD), &dwBytesWritten, NULL);

  CloseHandle(hFile);

  return true;
}

bool TPrinterControl::ReadPrinterInfo(AnsiString FileToReadFrom)
{
  HANDLE hFile;
  DWORD dwBytesRead;
  DWORD dwServerNameSize,
      dwPrinterNameSize,
      dwShareNameSize,
      dwPortNameSize,
      dwDriverNameSize,
```

FIG. 6.28

```
    dwCommentSize,
    dwLocationSize,
    dwSepFileSize,
    dwPrintProcessorSize,
    dwDatatypeSize,
    dwParametersSize,
    dwPortMonitorSize;
void *pPortMonitorName;

 hFile = CreateFile(FileToReadFrom.c_str(), GENERIC_READ,
   FILE_SHARE_READ, NULL, OPEN_EXISTING, FILE_ATTRIBUTE_NORMAL, NULL);

 if(NULL == hFile)
 {
   Messages->Add("CreateFile() Failed!");
   return false;
 }

SetFilePointer(hFile, 0, 0, FILE_BEGIN);

//PrinterInfoSize
SelectedPrinterInfoSize = 0;
ReadFile(hFile, (char*)&SelectedPrinterInfoSize,
  sizeof(DWORD), &dwBytesRead, NULL);

//dwServerNameSize
dwServerNameSize = 0;
ReadFile(hFile, (char*)&dwServerNameSize,
  sizeof(DWORD), &dwBytesRead, NULL);

//dwPrinterNameSize
dwPrinterNameSize = 0;
ReadFile(hFile, (char*)&dwPrinterNameSize,
  sizeof(DWORD), &dwBytesRead, NULL);

//dwShareNameSize
dwShareNameSize = 0;
ReadFile(hFile, (char*)&dwShareNameSize,
  sizeof(DWORD), &dwBytesRead, NULL);

//dwPortNameSize
dwPortNameSize = 0;
ReadFile(hFile, (char*)&dwPortNameSize,
  sizeof(DWORD), &dwBytesRead, NULL);

//dwDriverNameSize
dwDriverNameSize = 0;
ReadFile(hFile, (char*)&dwDriverNameSize,
  sizeof(DWORD), &dwBytesRead, NULL);

//dwCommentSize
dwCommentSize = 0;
ReadFile(hFile, (char*)&dwCommentSize,
  sizeof(DWORD), &dwBytesRead, NULL);

//dwLocationSize
dwLocationSize = 0;
```

FIG. 6.29

```
ReadFile(hFile, (char*)&dwL[illegible]nSize,
  sizeof(DWORD), &dwBytesRead, NULL);

//dwSepFileSize
dwSepFileSize = 0;
ReadFile(hFile, (char*)&dwSepFileSize,
  sizeof(DWORD), &dwBytesRead, NULL);

//dwPrintProcessorSize
dwPrintProcessorSize = 0;
ReadFile(hFile, (char*)&dwPrintProcessorSize,
  sizeof(DWORD), &dwBytesRead, NULL);

//dwDatatypeSize
dwDatatypeSize = 0;
ReadFile(hFile, (char*)&dwDatatypeSize,
  sizeof(DWORD), &dwBytesRead, NULL);

//dwParametersSize
dwParametersSize = 0;
ReadFile(hFile, (char*)&dwParametersSize,
  sizeof(DWORD), &dwBytesRead, NULL);

//dwPortMonitorSize
dwPortMonitorSize = 0;
ReadFile(hFile, (char*)&dwPortMonitorSize,
  sizeof(DWORD), &dwBytesRead, NULL);

free(SelectedPrinterInfo);
SelectedPrinterInfo = NULL;
SelectedPrinterInfo = (PRINTER_INFO_2*)malloc(SelectedPrinterInfoSize);
ZeroMemory(SelectedPrinterInfo, SelectedPrinterInfoSize);

SelectedPrinterInfo->pServerName = NULL;
SelectedPrinterInfo->pServerName = (LPTSTR)malloc(dwServerNameSize);
ZeroMemory(SelectedPrinterInfo->pServerName, dwServerNameSize);

SelectedPrinterInfo->pPrinterName = NULL;
SelectedPrinterInfo->pPrinterName = (LPTSTR)malloc(dwPrinterNameSize);
ZeroMemory(SelectedPrinterInfo->pPrinterName, dwPrinterNameSize);

SelectedPrinterInfo->pShareName = NULL;
SelectedPrinterInfo->pShareName = (LPTSTR)malloc(dwShareNameSize);
ZeroMemory(SelectedPrinterInfo->pShareName, dwShareNameSize);

SelectedPrinterInfo->pPortName = NULL;
SelectedPrinterInfo->pPortName = (LPTSTR)malloc(dwPortNameSize);
ZeroMemory(SelectedPrinterInfo->pPortName, dwPortNameSize);

SelectedPrinterInfo->pDriverName = NULL;
SelectedPrinterInfo->pDriverName = (LPTSTR)malloc(dwDriverNameSize);
ZeroMemory(SelectedPrinterInfo->pDriverName, dwDriverNameSize);

SelectedPrinterInfo->pComment = NULL;
SelectedPrinterInfo->pComment = (LPTSTR)malloc(dwCommentSize);
ZeroMemory(SelectedPrinterInfo->pComment, dwCommentSize);
```

FIG. 6.30

```
SelectedPrinterInfo->pLocati[illegible]ULL;
SelectedPrinterInfo->pLocation = (LPTSTR)malloc(dwLocationSize);
ZeroMemory(SelectedPrinterInfo->pLocation, dwLocationSize);

SelectedPrinterInfo->pSepFile = NULL;
SelectedPrinterInfo->pSepFile = (LPTSTR)malloc(dwSepFileSize);
ZeroMemory(SelectedPrinterInfo->pSepFile, dwSepFileSize);

SelectedPrinterInfo->pPrintProcessor = NULL;
SelectedPrinterInfo->pPrintProcessor = (LPTSTR)malloc(dwPrintProcessorSize);
ZeroMemory(SelectedPrinterInfo->pPrintProcessor, dwPrintProcessorSize);

SelectedPrinterInfo->pDatatype = NULL;
SelectedPrinterInfo->pDatatype = (LPTSTR)malloc(dwDatatypeSize);
ZeroMemory(SelectedPrinterInfo->pDatatype, dwDatatypeSize);

SelectedPrinterInfo->pParameters = NULL;
SelectedPrinterInfo->pParameters = (LPTSTR)malloc(dwParametersSize);
ZeroMemory(SelectedPrinterInfo->pParameters, dwParametersSize);

pPortMonitorName = NULL;
pPortMonitorName = malloc(dwPortMonitorSize);
ZeroMemory(pPortMonitorName, dwPortMonitorSize);

SelectedPrinterInfo->Attributes = (DWORD)malloc(sizeof(DWORD));
SelectedPrinterInfo->Attributes = 0;

SelectedPrinterInfo->Priority = (DWORD)malloc(sizeof(DWORD));
SelectedPrinterInfo->Priority = 0;

SelectedPrinterInfo->DefaultPriority = (DWORD)malloc(sizeof(DWORD));
SelectedPrinterInfo->DefaultPriority = 0;

SelectedPrinterInfo->StartTime = (DWORD)malloc(sizeof(DWORD));
SelectedPrinterInfo->StartTime = 0;

SelectedPrinterInfo->UntilTime = (DWORD)malloc(sizeof(DWORD));
SelectedPrinterInfo->UntilTime = 0;

SelectedPrinterInfo->Status = (DWORD)malloc(sizeof(DWORD));
SelectedPrinterInfo->Status = 0;

SelectedPrinterInfo->cJobs = (DWORD)malloc(sizeof(DWORD));
SelectedPrinterInfo->cJobs = 0;

SelectedPrinterInfo->AveragePPM = (DWORD)malloc(sizeof(DWORD));
SelectedPrinterInfo->AveragePPM = 0;

//pServerName
ReadFile(hFile, (char*)SelectedPrinterInfo->pServerName,
  dwServerNameSize, &dwBytesRead, NULL);

//pPrinterName
ReadFile(hFile, (char*)SelectedPrinterInfo->pPrinterName,
  dwPrinterNameSize, &dwBytesRead, NULL);

//pShareName
```

FIG. 6.31

```
ReadFile(hFile, (char*)SelectedPrinterInfo->pShareName,
   dwShareNameSize, &dwBytesRead, NULL);

//pPortName
ReadFile(hFile, (char*)SelectedPrinterInfo->pPortName,
   dwPortNameSize, &dwBytesRead, NULL);

//pDriverName
ReadFile(hFile, (char*)SelectedPrinterInfo->pDriverName,
   dwDriverNameSize, &dwBytesRead, NULL);

//pComment
ReadFile(hFile, (char*)SelectedPrinterInfo->pComment,
   dwCommentSize, &dwBytesRead, NULL);

//pLocation
ReadFile(hFile, (char*)SelectedPrinterInfo->pLocation,
   dwLocationSize, &dwBytesRead, NULL);

//pSepFile
ReadFile(hFile, (char*)SelectedPrinterInfo->pSepFile,
   dwSepFileSize, &dwBytesRead, NULL);

//pPrintProcessor
ReadFile(hFile, (char*)SelectedPrinterInfo->pPrintProcessor,
   dwPrintProcessorSize, &dwBytesRead, NULL);

//pDatatype
ReadFile(hFile, (char*)SelectedPrinterInfo->pDatatype,
   dwDatatypeSize, &dwBytesRead, NULL);

//pParameters
ReadFile(hFile, (char*)SelectedPrinterInfo->pParameters,
   dwParametersSize, &dwBytesRead, NULL);

//pPortMonitorName
ReadFile(hFile, (char*)pPortMonitorName,
   dwPortMonitorSize, &dwBytesRead, NULL);
PortMonitorDescription = (char*)pPortMonitorName;

//Attributes
ReadFile(hFile, (char*)&SelectedPrinterInfo->Attributes,
   sizeof(DWORD), &dwBytesRead, NULL);

//Priority
ReadFile(hFile, (char*)&SelectedPrinterInfo->Priority,
   sizeof(DWORD), &dwBytesRead, NULL);

//DefaultPriority
ReadFile(hFile, (char*)&SelectedPrinterInfo->DefaultPriority,
   sizeof(DWORD), &dwBytesRead, NULL);

//StartTime
ReadFile(hFile, (char*)&SelectedPrinterInfo->StartTime,
   sizeof(DWORD), &dwBytesRead, NULL);

//UntilTime
```

FIG. 6.32

```
ReadFile(hFile, (char*)&Selec[illegible]rinterInfo->UntilTime,
   sizeof(DWORD), &dwBytesRead, NULL);

//Status
ReadFile(hFile, (char*)&SelectedPrinterInfo->Status,
   sizeof(DWORD), &dwBytesRead, NULL);

//cJobs
ReadFile(hFile, (char*)&SelectedPrinterInfo->cJobs,
   sizeof(DWORD), &dwBytesRead, NULL);

//AveragePPM
ReadFile(hFile, (char*)&SelectedPrinterInfo->AveragePPM,
   sizeof(DWORD), &dwBytesRead, NULL);

//Now read the DevMode Structure size.
ReadFile(hFile, (char*)&dwDevModeSize,
   sizeof(DWORD), &dwBytesRead, NULL);

//Allocate the DevMode structure members.
free(SelectedPrinterInfo->pDevMode);
SelectedPrinterInfo->pDevMode = NULL;
SelectedPrinterInfo->pDevMode = (DEVMODE*)malloc(dwDevModeSize);
ZeroMemory(SelectedPrinterInfo->pDevMode, dwDevModeSize);

ZeroMemory(SelectedPrinterInfo->pDevMode->dmDeviceName, CCHDEVICENAME);
ZeroMemory(SelectedPrinterInfo->pDevMode->dmFormName, CCHFORMNAME);

//dmSize
SelectedPrinterInfo->pDevMode->dmSize = 0;
ReadFile(hFile, (char*)&SelectedPrinterInfo->pDevMode->dmSize,
   sizeof(WORD), &dwBytesRead, NULL);

//dmDeviceName[32]
ReadFile(hFile, (char*)SelectedPrinterInfo->pDevMode->dmDeviceName,
   CCHDEVICENAME, &dwBytesRead, NULL);

//dmSpecVersion
SelectedPrinterInfo->pDevMode->dmSpecVersion = 0;
ReadFile(hFile, (char*)&SelectedPrinterInfo->pDevMode->dmSpecVersion,
   sizeof(WORD), &dwBytesRead, NULL);

//dmDriverVersion
SelectedPrinterInfo->pDevMode->dmDriverVersion = 0;
ReadFile(hFile, (char*)&SelectedPrinterInfo->pDevMode->dmDriverVersion,
   sizeof(WORD), &dwBytesRead, NULL);

//dmDriverExtra
SelectedPrinterInfo->pDevMode->dmDriverExtra = 0;
ReadFile(hFile, (char*)&SelectedPrinterInfo->pDevMode->dmDriverExtra,
   sizeof(WORD), &dwBytesRead, NULL);

//dmFields
SelectedPrinterInfo->pDevMode->dmFields = 0;
ReadFile(hFile, (char*)&SelectedPrinterInfo->pDevMode->dmFields,
   sizeof(DWORD), &dwBytesRead, NULL);
```

FIG. 6.33

```
//dmOrientation
SelectedPrinterInfo->pDevMode->dmOrientation = 0;
ReadFile(hFile, (char*)&SelectedPrinterInfo->pDevMode->dmOrientation,
   sizeof(short), &dwBytesRead, NULL);

//dmPaperSize
SelectedPrinterInfo->pDevMode->dmPaperSize = 0;
ReadFile(hFile, (char*)&SelectedPrinterInfo->pDevMode->dmPaperSize,
   sizeof(short), &dwBytesRead, NULL);

//dmPaperLength
SelectedPrinterInfo->pDevMode->dmPaperLength = 0;
ReadFile(hFile, (char*)&SelectedPrinterInfo->pDevMode->dmPaperLength,
   sizeof(short), &dwBytesRead, NULL);

//dmPaperWidth
SelectedPrinterInfo->pDevMode->dmPaperWidth = 0;
ReadFile(hFile, (char*)&SelectedPrinterInfo->pDevMode->dmPaperWidth,
   sizeof(short), &dwBytesRead, NULL);

//dmScale
SelectedPrinterInfo->pDevMode->dmScale = 0;
ReadFile(hFile, (char*)&SelectedPrinterInfo->pDevMode->dmScale,
   sizeof(short), &dwBytesRead, NULL);

//dmCopies
SelectedPrinterInfo->pDevMode->dmCopies = 0;
ReadFile(hFile, (char*)&SelectedPrinterInfo->pDevMode->dmCopies,
   sizeof(short), &dwBytesRead, NULL);

//dmDefaultSource
SelectedPrinterInfo->pDevMode->dmDefaultSource = 0;
ReadFile(hFile, (char*)&SelectedPrinterInfo->pDevMode->dmDefaultSource,
   sizeof(short), &dwBytesRead, NULL);

//dmPrintQuality
SelectedPrinterInfo->pDevMode->dmPrintQuality = 0;
ReadFile(hFile, (char*)&SelectedPrinterInfo->pDevMode->dmPrintQuality,
   sizeof(short), &dwBytesRead, NULL);

//dmColor
SelectedPrinterInfo->pDevMode->dmColor = 0;
ReadFile(hFile, (char*)&SelectedPrinterInfo->pDevMode->dmColor,
   sizeof(short), &dwBytesRead, NULL);

//dmDuplex
SelectedPrinterInfo->pDevMode->dmDuplex = 0;
ReadFile(hFile, (char*)&SelectedPrinterInfo->pDevMode->dmDuplex,
   sizeof(short), &dwBytesRead, NULL);

//dmYResolution
SelectedPrinterInfo->pDevMode->dmYResolution = 0;
ReadFile(hFile, (char*)&SelectedPrinterInfo->pDevMode->dmYResolution,
   sizeof(short), &dwBytesRead, NULL);

//dmTTOption
SelectedPrinterInfo->pDevMode->dmTTOption = 0;
```

FIG. 6.34

```
    ReadFile(hFile, (char*)&Selec[illegible]rinterInfo->pDevMode->dmTTOption,
      sizeof(short), &dwBytesRead, NULL);

    //dmCollate
    SelectedPrinterInfo->pDevMode->dmCollate = 0;
    ReadFile(hFile, (char*)&SelectedPrinterInfo->pDevMode->dmCollate,
      sizeof(short), &dwBytesRead, NULL);

    //dmFormName[32]
    ReadFile(hFile, (char*)SelectedPrinterInfo->pDevMode->dmFormName,
      CCHFORMNAME, &dwBytesRead, NULL);

    //dmBitsPerPel
    SelectedPrinterInfo->pDevMode->dmBitsPerPel = 0;
    ReadFile(hFile, (char*)&SelectedPrinterInfo->pDevMode->dmBitsPerPel,
      sizeof(USHORT), &dwBytesRead, NULL);

    //dmPelsWidth
    SelectedPrinterInfo->pDevMode->dmPelsWidth = 0;
    ReadFile(hFile, (char*)&SelectedPrinterInfo->pDevMode->dmPelsWidth,
      sizeof(DWORD), &dwBytesRead, NULL);

    //dmPelsHeight
    SelectedPrinterInfo->pDevMode->dmPelsHeight = 0;
    ReadFile(hFile, (char*)&SelectedPrinterInfo->pDevMode->dmPelsHeight,
      sizeof(DWORD), &dwBytesRead, NULL);

    //dmDisplayFlags
    SelectedPrinterInfo->pDevMode->dmDisplayFlags = 0;
    ReadFile(hFile, (char*)&SelectedPrinterInfo->pDevMode->dmDisplayFlags,
      sizeof(DWORD), &dwBytesRead, NULL);

    //dmDisplayFrequency
    SelectedPrinterInfo->pDevMode->dmDisplayFrequency = 0;
    ReadFile(hFile, (char*)&SelectedPrinterInfo->pDevMode->dmDisplayFrequency,
      sizeof(DWORD), &dwBytesRead, NULL);

    CloseHandle(hFile);
    free(pPortMonitorName);
    pPortMonitorName = NULL;

    return true;
  }


  bool TPrinterControl::SaveLocalPrinter(AnsiString PrinterToSave, AnsiString SaveName)
  {
    PrinterName = PrinterToSave;
    NewPrinterName = SaveName;
    if (!SaveLocalPrinter())
    {
      Messages->Add("SaveLocalPrinter() Failed!");
      return false;
    }

    return true;
  }
```

FIG. 6.35

```
bool TPrinterControl::SaveLocalPrinter(AnsiString PrinterToSave)
{
   PrinterName = PrinterToSave;
   NewPrinterName = PrinterToSave;
   if (!SaveLocalPrinter())
   {
      Messages->Add("SaveLocalPrinter() Failed!");
      return false;
   }

   return true;
}


bool TPrinterControl::SaveLocalPrinter()
{
        HANDLE hPrinter;
        DWORD dwReturned;
   AnsiString MonitorName;

   NewPrinterName = CleanupFilename(NewPrinterName);

        //Open handle to printer.
        if( 0 == OpenPrinter(PrinterName.c_str(),&hPrinter,NULL))
   {
      Messages->Add("OpenPrinter() Failed!");
      return false;
   }

        //Select the default printer.
        if(NULL == hPrinter)
   {
      Messages->Add("NULL Printer Handle!");
   }

   // Get the buffer size needed
   GetPrinter(hPrinter,2,NULL,0,&SelectedPrinterInfoSize);

   free(SelectedPrinterInfo);
        SelectedPrinterInfo = (PRINTER_INFO_2*)malloc(SelectedPrinterInfoSize);
   ZeroMemory(SelectedPrinterInfo, SelectedPrinterInfoSize);

        //get the printer info
   if (!GetPrinter(hPrinter, 2, (unsigned char*)SelectedPrinterInfo,
      SelectedPrinterInfoSize, &dwReturned))
   {
      Messages->Add("GetPrinter() Failed!");
   }

   //Get the DevMode structure
   dwDevModeSize = DocumentProperties(NULL, hPrinter,
      PrinterName.c_str(), NULL, NULL, 0);

   SelectedPrinterInfo->pDevMode = (DEVMODE*)malloc(dwDevModeSize);

   DocumentProperties(NULL, hPrinter, PrinterName.c_str(),
      SelectedPrinterInfo->pDevMode, NULL, DM_OUT_BUFFER);
```

FIG. 6.36

```
        //Close the handle to th[illegible]nter.
    ClosePrinter(hPrinter);

    SelectedPrinterInfo->pPrinterName = NewPrinterName.c_str();

    WritePrinterInfo(PrtInfoPath + "\\" + NewPrinterName + ".Prt");

    TRegTools *RegDump = new TRegTools(HKEY_LOCAL_MACHINE,
      "SYSTEM\\CurrentControlSet\\Control\\Print\\Printers\\" + PrinterName +
      "\\PrinterDriverData", PrtInfoPath + "\\" + NewPrinterName + ".Dev");
    delete RegDump;
    RegDump = NULL;

    return true;
}

bool TPrinterControl::CreateLocalPrinter(AnsiString PrinterToCreate,
  AnsiString NewPrinterToCreate)
{
    PrinterName = PrinterToCreate;
    NewPrinterName = NewPrinterToCreate;
    if (!CreateLocalPrinter())
    {
      Messages->Add("CreateLocalPrinter() Failed!");
      return false;
    }

    return true;
}


bool TPrinterControl::CreateLocalPrinter(AnsiString PrinterToCreate)
{
    PrinterName = PrinterToCreate;
    NewPrinterName = PrinterToCreate;
    if (!CreateLocalPrinter())
    {
      Messages->Add("CreateLocalPrinter() Failed!");
      return false;
    }

    return true;
}

bool TPrinterControl::CreateLocalPrinter(AnsiString PrinterToCreate,
  AnsiString NewPrinterToCreate, TStringList *Users)
{
    if (!Users)
      return false;

    PrinterName = PrinterToCreate;
    NewPrinterName = NewPrinterToCreate;

    if (!CreateLocalPrinter())
    {
      Messages->Add("CreateLocalPrinter() Failed!");
      return false;
```

FIG. 6.37

```
    }

    PrinterAddAccessRights(NewPrinterName, Users, CONTROL_FULL);

    return true;
}

bool TPrinterControl::CreateLocalPrinter()
{
   HANDLE hPrinter;
   TStringList *LocalPrinters = new TStringList;
   int i;

STEP 400
   //Read in the PRINTER_INFO_2 structure from file.
   if (!ReadPrinterInfo(PrtInfoPath + "\\" + PrinterName + ".Prt"))
   {
     Messages->Add("Unable to Read Printer File: " + PrinterName);
     return false;
   }

STEP 410
   SelectedPrinterInfo->pPrinterName = (LPTSTR)malloc(strlen(NewPrinterName.c_str()) + 1);
   SelectedPrinterInfo->pPrinterName = NewPrinterName.c_str();

   LocalPrinters = GetLocalPrinters();

   i = -1;
   while (LocalPrinters->Count > ++i)
   {
     if (0 == stricmp(LocalPrinters->Strings[i].c_str(), NewPrinterName.c_str()))
     {
       LocalPrinters->Free();
       return true;
     }
   }
   LocalPrinters->Free();

   if (!NewPortMonitor.IsEmpty() && !NewPortName.IsEmpty())
   {
      PortMonitorDescription = NewPortMonitor;

      if (0 == NewPortMonitor.AnsiCompareIC("Client Printer Port"))
         NewPortName = GetIcaClientPort(NewPortName);

      SelectedPrinterInfo->pPortName = (LPTSTR)malloc(strlen(NewPortName.c_str()) + 1);
      SelectedPrinterInfo->pPortName = NewPortName.c_str();;
   }

STEP 420
   if (!ValidateMonitor(PortMonitorDescription))
   {
     Messages->Add("Invalid Port Monitor: " + PortMonitorDescription);
     return false;
   }

STEP 430
```

FIG. 6.38

```
if (!ValidatePort(SelectedPrinterInfo->pPortName, PortMonitorDescription))
{
   TRegistry *reg = new TRegistry();
   reg->RootKey = HKEY_LOCAL_MACHINE;
   if (reg->OpenKey("Software\\Microsoft\\Windows NT\\CurrentVersion\\Ports", false))
   {
      try
      {
         reg->WriteString("CLIENT\\LPT1:", "");
         reg->WriteString("CLIENT\\LPT2:", "");
         reg->WriteString("CLIENT\\COM1:", "");
         reg->WriteString("CLIENT\\COM2:", "");
      }
      catch(...)
      {
      }
   }
   reg->CloseKey();
   reg->Free();

   if (!ValidatePort(SelectedPrinterInfo->pPortName, PortMonitorDescription))
   {
      Messages->Add("Invalid Port:");
      return false;
   }
}
```

STEP 440

```
if (!ValidateDriver(SelectedPrinterInfo->pDriverName))
{
   Messages->Add("Invalid Driver:");
   return false;
}
```

STEP 450

```
//Add the printer
hPrinter = AddPrinter(NULL, 2, (unsigned char*)SelectedPrinterInfo);

if (NULL == hPrinter)
{
   DWORD dwError = 0;
   dwError = GetLastError();
   Messages->Add("Failed to Install Printer: " + NewPrinterName +
     " Error Number " + String(dwError));
   return false;
}
```

STEP 460

```
DocumentProperties(NULL, hPrinter, NewPrinterName.c_str(),
   SelectedPrinterInfo->pDevMode, SelectedPrinterInfo->pDevMode,
   DM_IN_BUFFER | DM_OUT_BUFFER);

SetPrinter(hPrinter, 2, (BYTE*)SelectedPrinterInfo, 0);

ClosePrinter(hPrinter);
```

FIG. 6.39

```
//Write the Device specific DevMode data. Some drivers do not store this
//in the registry.
 TRegistry *Reg = new TRegistry;

 Reg->RootKey = HKEY_LOCAL_MACHINE;
 if (Reg->OpenKey("SYSTEM\\CurrentControlSet\\Control\\Print\\Printers\\" +
   NewPrinterName, false))
 {

   TRegTools *RegDump = new TRegTools(PrtInfoPath + "\\" + PrinterName + ".Dev",
     HKEY_LOCAL_MACHINE,
     "SYSTEM\\CurrentControlSet\\Control\\Print\\Printers\\" +
     NewPrinterName + "\\PrinterDriverData");
   delete RegDump;
   RegDump = NULL;
 }

 Reg->CloseKey();
 Reg->Free();
```

STEP 470

```
 PrinterSetCurrentUserOnlyRights(NewPrinterName);
 PrinterAddAccessRights(NewPrinterName, "SYSTEM", CONTROL_FULL);

 SendNotifyMessage(HWND_BROADCAST, WM_DEVMODECHANGE, 0L,
   (LPARAM)(LPCSTR)NewPrinterName.c_str());


 NewPortName = "";
 NewPortMonitor = "";

 return true;
}

DRIVER_INFO_3 *TPrinterControl::GetRemoteDriverInfo(AnsiString ServerName, AnsiString DriverName)
{
 DWORD dwSize;
 DWORD dwNeeded;
 DWORD dwReturned;
 DRIVER_INFO_3 *pDriverInfoReturn;
 DRIVER_INFO_3 *pDrv = new DRIVER_INFO_3;

 EnumPrinterDrivers(ServerName.c_str(), NULL, 3, (unsigned char*)pDrv,
  0, &dwSize, &dwReturned);

 pDrv = (DRIVER_INFO_3*)malloc(dwSize);
 ZeroMemory(pDrv, dwSize);

 if (!EnumPrinterDrivers(ServerName.c_str(), NULL, 3, (unsigned char*)pDrv,
   dwSize, &dwNeeded, &dwReturned))
 {
   Messages->Add("EnumPrinterDrivers() Failed!");
 }

 int i = -1;
 while ((int)dwReturned > ++i)
 {
```

FIG. 6.40

```
        if (0 == stricmp((const char*)DriverName.c_str(),
            (const char*)pDrv[i].pName))
        {
          pDriverInfoReturn = &pDrv[i];
          break;
        }
      }

      if ((int)dwReturned <= i)
        return NULL;

      return pDriverInfoReturn;
    }


    TStringList *TPrinterControl::CopyDriverFiles(TStringList *SourceFiles)
    {
      AnsiString LocalDriverDir;
      AnsiString DestFileName;
      TStringList *ReturnStrings = new TStringList;
      BYTE *pTemp;
      DWORD dwBufferSize;
      DWORD dwBytesNeeded;
      int i;

      dwBufferSize = 1024;

      pTemp = (BYTE*)malloc(dwBufferSize);

      if (0 == GetPrinterDriverDirectory(NULL, NULL, 1, pTemp, dwBufferSize,
        &dwBytesNeeded))
        return ERROR;

      LocalDriverDir = (char*)pTemp;
      LocalDriverDir = LocalDriverDir + "\\";

      i = -1;
      while (SourceFiles->Count > ++i)
      {
        DestFileName = LocalDriverDir +
          ExtractFileName(SourceFiles->Strings[i]);

        ::CopyFile(SourceFiles->Strings[i].c_str(), DestFileName.c_str(), NULL);

        ReturnStrings->Add(DestFileName);
      }

      free(pTemp);

      return ReturnStrings;
    }

    bool TPrinterControl::ValidateMonitor(AnsiString MonitorName)
    {
      MONITOR_INFO_2 *pLocalMonitors = new MONITOR_INFO_2;
      DWORD dwSize;
      DWORD dwBytesNeeded;
```

FIG. 6.41

```
    DWORD dwReturned;
    int i;

    if (0 == MonitorName.AnsiCompareIC("Client Printer Port"))
    {
       return true;
    }

    //Get the memory needed.
    EnumMonitors(NULL, 2, NULL, 0, &dwSize, &dwReturned);

    pLocalMonitors = (MONITOR_INFO_2*)malloc(dwSize);

    if (EnumMonitors(NULL, 2, (unsigned char*)pLocalMonitors, dwSize, &dwBytesNeeded,
      &dwReturned))
    {
      i = -1;
      while ((int)dwReturned > ++i)
      {
        if (0 == stricmp(MonitorName.c_str(), pLocalMonitors[i].pName))
        break;
      }
    }

    if (i >= (int)dwReturned || 0 >= dwReturned)
    {
      free(pLocalMonitors);
      return false;
    }

    free(pLocalMonitors);
    return true;
}

bool TPrinterControl::ValidatePort(AnsiString PortName, AnsiString PortMonitor)
{
    HINSTANCE hLib;
    PORT_INFO_1 *pLocalPorts = new PORT_INFO_1;
    PORT_INFO_1 PortInfo;
    DWORD dwSize;
    DWORD dwReturned;
    DWORD dwBytesNeeded;
    int i;

    EnumPorts(NULL, 1, (unsigned char*)pLocalPorts, 0, &dwSize, &dwReturned);

    pLocalPorts = (PORT_INFO_1*)malloc(dwSize);

    EnumPorts(NULL, 1, (unsigned char*)pLocalPorts, dwSize, &dwBytesNeeded, &dwReturned);

    i = -1;
    while ((int)dwReturned > ++i)
    {
      if (0 == stricmp(PortName.c_str(), pLocalPorts[i].pName))
        break;
    }
    free(pLocalPorts);
```

FIG. 6.42

```
//We found the port.
if((int)dwReturned > i)
  return true;

hLib = LoadLibrary("winspool.drv");

if(NULL == hLib)
  return false;

ADDPORTEX pfnAddPortEx = (ADDPORTEX)GetProcAddress(hLib, "AddPortExA");

PortInfo.pName = PortName.c_str();

if(pfnAddPortEx)
{
  if(!(*pfnAddPortEx)(NULL, 1, (unsigned char*)&PortInfo,
    (WCHAR*)PortMonitorDescription.c_str()))
  {
    FreeLibrary(hLib);
    return false;
  }
}

FreeLibrary(hLib);
return true;
}

bool TPrinterControl::ValidateDriver(AnsiString DriverName)
{
DRIVER_INFO_3 *pRemoteDriver;
DRIVER_INFO_3 NewLocalDriverInfo;
TStringList *LocalDrivers = new TStringList;
TStringList *DriverFilesToCopy = new TStringList;
TStringList *CopiedDriverFiles = new TStringList;
int i;
int j;
int nPos;
int NullTerminatorsFound;
BYTE *pTemp;
DWORD dwBufferSize = 1024;

LocalDrivers = GetLocalDrivers();

i = -1;
while (LocalDrivers->Count > ++i)
{
  if(0 == stricmp(LocalDrivers->Strings[i].c_str(), DriverName.c_str()))
  {
    LocalDrivers->Free();
    return true;
  }
}

pRemoteDriver =  GetRemoteDriverInfo(SourceServerName, DriverName);

if(NULL == pRemoteDriver)
  return false;
```

FIG. 6.43

```
DriverFilesToCopy->Add(pRemoteDriver->pDriverPath);
DriverFilesToCopy->Add(pRemoteDriver->pDataFile);
DriverFilesToCopy->Add(pRemoteDriver->pConfigFile);
DriverFilesToCopy->Add(pRemoteDriver->pHelpFile);

i = -1;
j = -1;
NullTerminatorsFound = 0;
pTemp = (BYTE*)malloc(dwBufferSize);
ZeroMemory(pTemp, dwBufferSize);
while (++i < (int)dwBufferSize && 2 > NullTerminatorsFound)
{
  if ('\0' == pRemoteDriver->pDependentFiles[i])
  {
    DriverFilesToCopy->Add((char*)pTemp);
    ZeroMemory(pTemp, dwBufferSize);

    j = -1;
    NullTerminatorsFound++;

    continue;
  }

  pTemp[++j] =  pRemoteDriver->pDependentFiles[i];
}

CopiedDriverFiles = CopyDriverFiles(DriverFilesToCopy);

NewLocalDriverInfo.cVersion = pRemoteDriver->cVersion;
NewLocalDriverInfo.pName = pRemoteDriver->pName;
NewLocalDriverInfo.pEnvironment = pRemoteDriver->pEnvironment;
NewLocalDriverInfo.pMonitorName = pRemoteDriver->pMonitorName;
NewLocalDriverInfo.pDefaultDataType = pRemoteDriver->pDefaultDataType;


i = -1;
NewLocalDriverInfo.pDriverPath = CopiedDriverFiles->Strings[++i].c_str();
NewLocalDriverInfo.pDataFile = CopiedDriverFiles->Strings[++i].c_str();
NewLocalDriverInfo.pConfigFile = CopiedDriverFiles->Strings[++i].c_str();
NewLocalDriverInfo.pHelpFile = CopiedDriverFiles->Strings[++i].c_str();

NewLocalDriverInfo.pDependentFiles = (char*)malloc(dwBufferSize);
ZeroMemory(NewLocalDriverInfo.pDependentFiles, dwBufferSize);
nPos = -1;
while (CopiedDriverFiles->Count > ++i)
{
  j = 0;
  while(CopiedDriverFiles->Strings[i].Length() >= ++j)
    NewLocalDriverInfo.pDependentFiles[++nPos] = CopiedDriverFiles->Strings[i][j];

  NewLocalDriverInfo.pDependentFiles[++nPos] = '\0';
}
NewLocalDriverInfo.pDependentFiles[++nPos] = '\0';

if (!AddPrinterDriver(NULL, 3, (unsigned char*)&NewLocalDriverInfo))
{
  delete pRemoteDriver;
```

FIG. 6.44

```
    pRemoteDriver = NULL;
    LocalDrivers->Free();
    return false;
  }

  delete pRemoteDriver;
  pRemoteDriver = NULL;
  LocalDrivers->Free();

  return true;
}


bool TPrinterControl::PrinterSetOwnerOnlyRights(AnsiString PrinterName)
{
        HANDLE                                  hPrinter = NULL;
        PRINTER_DEFAULTS            pdPrinter;
        LPPRINTER_INFO_3            pPrinterInfo = NULL;
        PACCESS_ALLOWED_ACE                 pTempAce;
        PSID                                pidOwner;
        PACL                                pPrinterNewACL;
        DWORD                                   dwBytesNeeded;
        BOOL                                bOwnerDefaulted;

        // Assign desired access level to PRINTER_DEAFULTS
        pdPrinter.DesiredAccess = PRINTER_ALL_ACCESS;
        pdPrinter.pDevMode = NULL;
        pdPrinter.pDatatype = NULL;

        //Open the printer and add the User
        if (0 != OpenPrinter(PrinterName.c_str(),&hPrinter,&pdPrinter))
        {
                //Get the required value of dwBytesNeeded. And allocate the memory for pPrinterInfo.
                GetPrinter(hPrinter,3,(LPBYTE)pPrinterInfo,0,&dwBytesNeeded);
                pPrinterInfo = (LPPRINTER_INFO_3)malloc(dwBytesNeeded);

                //Get the actual printer stuff and add the ACE to the DACL.
                if (0 != GetPrinter(hPrinter,3,(LPBYTE)pPrinterInfo,dwBytesNeeded,&dwBytesNeeded))
                {

                        if (GetSecurityDescriptorOwner(pPrinterInfo-
>pSecurityDescriptor,&psidOwner,&bOwnerDefaulted))
                        {
                                //Multiply by 2 to get the size needed for 2 ACEs.
                                DWORD dwSize = sizeof(ACL) + 2*(sizeof(ACCESS_ALLOWED_ACE) +
                                        GetLengthSid(psidOwner) - sizeof(DWORD));

                                pPrinterNewACL = (PACL)malloc(dwSize);
                                InitializeAcl(pPrinterNewACL, dwSize, ACL_REVISION);

                                pTempAce = (PACCESS_ALLOWED_ACE)malloc(sizeof(ACCESS_ALLOWED_ACE));

                                //For some reason, there are 2 ACEs for "Full Control".Add the ACEs.
                                AddAccessAllowedAce(pPrinterNewACL,ACL_REVISION,GENERIC_ALL,psidOwner);
                                if (0 != GetAce(pPrinterNewACL,pPrinterNewACL->AceCount -
1,(LPVOID*)&pTempAce))
                                        pTempAce->Header.AceFlags = OBJECT_INHERIT_ACE |
```

FIG. 6.45

```
INHERIT_ONLY_ACE;

AddAccessAllowedAce(pPrinterNewACL,ACL_REVISION,PRINTER_ALL_ACCESS,psidOwner);
                                        if (0 != GetAce(pPrinterNewACL,pPrinterNewACL->AceCount -,(LPVOID*)&pTempAce))
                                                pTempAce->Header.AceFlags = CONTAINER_INHERIT_ACE;

                                        InitializeSecurityDescriptor(pPrinterInfo->pSecurityDescriptor,
                                                SECURITY_DESCRIPTOR_REVISION);

                                        SetSecurityDescriptorDacl(pPrinterInfo->pSecurityDescriptor,TRUE,
                                                pPrinterNewACL,FALSE);

                                        SetPrinter(hPrinter,3,(LPBYTE)pPrinterInfo,0);
                                }
                        }

                        free(pPrinterInfo);
                }
        else
          return false;

                //Close the printer.
                ClosePrinter(hPrinter);

                return true;
}


bool TPrinterControl::PrinterSetCurrentUserOnlyRights(AnsiString PrinterName)
{
                HANDLE                                                  hPrinter = NULL;
                PRINTER_DEFAULTS                        pdPrinter;
                LPPRINTER_INFO_3                        pPrinterInfo = NULL;
                PACCESS_ALLOWED_ACE                             pTempAce;
//              PSID                                            psidOwner;
        PSID            psidCurrentUser;
                PACL                                            pPrinterNewACL;
                DWORD                                                   dwBytesNeeded = 0;
        DWORD           dwSizeDomain = 256;
                BOOL                                            bOwnerDefaulted;
        char            szUserName[256];
        char            szDomainController[256];
        char            szDomainName[256];
        PSID_NAME_USE           peUse;

                // Assign desired access level to PRINTER_DEAFULTS
                pdPrinter.DesiredAccess = PRINTER_ALL_ACCESS;
                pdPrinter.pDevMode = NULL;
                pdPrinter.pDatatype = NULL;

                //Open the printer and add the User
                if (0 != OpenPrinter(PrinterName.c_str(),&hPrinter,&pdPrinter))
                {
                        //Get the required value of dwBytesNeeded. And allocate the memory for pPrinterInfo.
                        GetPrinter(hPrinter,3,(LPBYTE)pPrinterInfo,0,&dwBytesNeeded);
                        pPrinterInfo = (LPPRINTER_INFO_3)malloc(dwBytesNeeded);
```

FIG. 6.46

```
                //Get the actua[illegible]nter stuff and add the ACE to the DACL.
                if (0 != GetPrinter(hPrinter,3,(LPBYTE)pPrinterInfo,dwBytesNeeded,&dwBytesNeeded))
                {
          strcpy(szDomainController, getenv("LOGONSERVER"));
          strcpy(szUserName, getenv("USERNAME"));
          strcpy(szDomainName, getenv("USERDOMAIN"));

          dwBytesNeeded = 0;
          dwSizeDomain = 256;
          LookupAccountName(szDomainController, szUserName, psidCurrentUser,
             &dwBytesNeeded, szDomainName, &dwSizeDomain, peUse);

           peUse = (PSID_NAME_USE)malloc(sizeof(SID_NAME_USE));
           psidCurrentUser = (PSID)malloc(dwBytesNeeded);

          if (LookupAccountName(szDomainController, szUserName, psidCurrentUser,
             &dwBytesNeeded, szDomainName, &dwSizeDomain, peUse))
                          {
                                  //Multiply by 2 to get the size needed for 2 ACEs.
                                  DWORD dwSize = sizeof(ACL) + 2*(sizeof(ACCESS_ALLOWED_ACE) +
                                          GetLengthSid(psidCurrentUser) - sizeof(DWORD));

                                  pPrinterNewACL = (PACL)malloc(dwSize);
                                  InitializeAcl(pPrinterNewACL, dwSize, ACL_REVISION);

                                  pTempAce = (PACCESS_ALLOWED_ACE)malloc(sizeof(ACCESS_ALLOWED_ACE));

                                  //For some reason, there are 2 ACEs for "Full Control".Add the ACEs.

AddAccessAllowedAce(pPrinterNewACL,ACL_REVISION,GENERIC_ALL,psidCurrentUser);
                                  if (0 != GetAce(pPrinterNewACL,pPrinterNewACL->AceCount -
1,(LPVOID*)&pTempAce))
                                          pTempAce->Header.AceFlags = OBJECT_INHERIT_ACE |
INHERIT_ONLY_ACE;


AddAccessAllowedAce(pPrinterNewACL,ACL_REVISION,PRINTER_ALL_ACCESS,psidCurrentUser);
                                  if (0 != GetAce(pPrinterNewACL,pPrinterNewACL->AceCount -
1,(LPVOID*)&pTempAce))
                                          pTempAce->Header.AceFlags = CONTAINER_INHERIT_ACE;

                                  InitializeSecurityDescriptor(pPrinterInfo->pSecurityDescriptor,
                                          SECURITY_DESCRIPTOR_REVISION);

                                  SetSecurityDescriptorDacl(pPrinterInfo->pSecurityDescriptor,TRUE,
                                          pPrinterNewACL,FALSE);

                                  SetPrinter(hPrinter,3,(LPBYTE)pPrinterInfo,0);
                          }
                }

                free(pPrinterInfo);
        }
    else
      return false;

         //Close the printer.
```

FIG. 6.47

```
        ClosePrinter(hPrinter);

        return true;
}

bool TPrinterControl::PrinterAddAccessRights(AnsiString PrinterName, TStringList *Users, int nAccess)
{
  int i = -1;

  while (Users->Count > ++i)
  {
    PrinterAddAccessRights(PrinterName, Users->Strings[i], nAccess);
  }

  return true;
}


bool TPrinterControl::PrinterAddAccessRights(AnsiString PrinterName, AnsiString UserName, int nAccess)
{
        ACL_SIZE_INFORMATION      ACLInformation;
        PRINTER_DEFAULTS pdPrinter;
        LPPRINTER_INFO_3 pPrinterInfo = NULL;
        PACCESS_ALLOWED_ACE pTempAce;
        HANDLE hPrinter = NULL;
        PACL pPrinterACL;
        PACL pPrinterNewACL;
        DWORD           dwBytesNeeded;
        BOOL bDaclPresent = FALSE;
        BOOL bDaclDefaulted = FALSE;
        int i;

        //Used for LookupAccountName().
        PSID psidUserName;
        PSID_NAME_USE peUse;
        char szDomainName[256];
        DWORD           dwSizeDomain = 256;

        // Assign desired access level to PRINTER_DEFAULTS
        pdPrinter.DesiredAccess = PRINTER_ALL_ACCESS;
        pdPrinter.pDevMode = NULL;
        pdPrinter.pDatatype = NULL;


        //Let's get the SID of the user.
  dwSizeDomain = 256;
  dwBytesNeeded = 0;

  LookupAccountName(NULL, UserName.c_str(), psidUserName, &dwBytesNeeded,
    szDomainName, &dwSizeDomain, peUse);

        peUse = (PSID_NAME_USE)malloc(sizeof(SID_NAME_USE));
        psidUserName = (PSID)malloc(dwBytesNeeded);

        if (0 == LookupAccountName(NULL, UserName.c_str(), psidUserName, &dwBytesNeeded, szDomainName,
&dwSizeDomain, peUse))
  {
```

FIG. 6.48

```
        free(peUse);
        free(psidUserName);
                return false;
    }


        //Open the printer and add the User
        if (0 != OpenPrinter(PrinterName.c_str(),&hPrinter,&pdPrinter))
        {

                //Get the required value of dwBytesNeeded. And allocate the memory for pPrinterInfo.
                GetPrinter(hPrinter,3,(LPBYTE)pPrinterInfo,0,&dwBytesNeeded);
                pPrinterInfo = (LPPRINTER_INFO_3)malloc(dwBytesNeeded);

                //Get the actual printer stuff and add the ACE to the DACL.
                if (0 != GetPrinter(hPrinter,3,(LPBYTE)pPrinterInfo,dwBytesNeeded,&dwBytesNeeded))
                {
                        // Get printer ACL
                        GetSecurityDescriptorDacl(pPrinterInfo->pSecurityDescriptor,&bDaclPresent,
                                &pPrinterACL,&bDaclDefaulted);

                        // Get the number of entries in the ACL
                        GetAclInformation(pPrinterACL,&ACLInformation,sizeof(ACLInformation),
                                AclSizeInformation);


                        //Multiply by 2 to get the size needed for 2 ACEs.
                        DWORD dwSize = pPrinterACL->AclSize + 2*(sizeof(ACCESS_ALLOWED_ACE) +
                                GetLengthSid(psidUserName) - sizeof(DWORD));

                        pPrinterNewACL = (PACL)malloc(dwSize);
                        InitializeAcl(pPrinterNewACL, dwSize, ACL_REVISION);

                        //Copy the old ACL's ACEs to the new ACL.
                        pTempAce = (PACCESS_ALLOWED_ACE)malloc(sizeof(ACCESS_ALLOWED_ACE));
                        i = -1;
                        while (pPrinterACL->AceCount > ++i)
                        {
                                if (0 != GetAce(pPrinterACL, i,(LPVOID*)&pTempAce))
                                        AddAce(pPrinterNewACL, ACL_REVISION, MAXDWORD, pTempAce,
  pTempAce->Header.AceSize);
                        }

                        switch(nAccess)
                        {
                                case(CONTROL_FULL):
                                        //For some reason, there are 2 ACEs for "Full Control".Add the ACEs.

  AddAccessAllowedAce(pPrinterNewACL,ACL_REVISION,GENERIC_ALL,psidUserName);
                                        if (0 != GetAce(pPrinterNewACL,pPrinterNewACL->AceCount -
  1,(LPVOID*)&pTempAce))
                                                pTempAce->Header.AceFlags = OBJECT_INHERIT_ACE |
  INHERIT_ONLY_ACE;


  AddAccessAllowedAce(pPrinterNewACL,ACL_REVISION,PRINTER_ALL_ACCESS,psidUserName);
                                        if (0 != GetAce(pPrinterNewACL,pPrinterNewACL->AceCount -
```

FIG. 6.49

```
1,(LPVOID*)&pTempAce))
                                        pTempAce->Header.AceFlags = CONTAINER_INHERIT_ACE;
                                break;

                        default:
                                break;
                }

                InitializeSecurityDescriptor(pPrinterInfo-
>pSecurityDescriptor,SECURITY_DESCRIPTOR_REVISION);
                SetSecurityDescriptorDacl(pPrinterInfo->pSecurityDescriptor,TRUE,pPrinterNewACL,FALSE);

                SetPrinter(hPrinter,3,(LPBYTE)pPrinterInfo,0);
            }

            free(pPrinterInfo);
    free(peUse);
        }
  else
    return false;

        //Close the printer.
        ClosePrinter(hPrinter);

        return true;
}

bool TPrinterControl::RemapPort(AnsiString Port, AnsiString Monitor)
{
  if (Port.IsEmpty() || Monitor.IsEmpty())
  {
   Messages->Add("Unable to remap Port!");
   return false;
  }

  NewPortName = Port;
  NewPortMonitor = Monitor;

  return true;
}

TStringList *TPrinterControl::GetConfigFileList()
{
  TStringList *ConfigFiles = new TStringList;
  TStringList *Filenames = new TStringList;
  int i;

  EnumerateFiles(PrtInfoPath, Filenames, false, NULL);

  i = -1;
  while (Filenames->Count > ++i)
  {
    Filenames->Strings[i] = JustFilenameL(Filenames->Strings[i]);

    //Check for dots.
    if (0 == Filenames->Strings[i].AnsiCompareIC(".") ||
      0 == Filenames->Strings[i].AnsiCompareIC(".."))
```

FIG. 6.50

```
        {
          continue;
        }

        Filenames->Strings[i] = Filenames->Strings[i].SubString(
          1, (Filenames->Strings[i].Length() - 4));

        if (0 > ConfigFiles->IndexOf(Filenames->Strings[i]) &&
             !Filenames->Strings[i].IsEmpty())
        {
          ConfigFiles->Add(Filenames->Strings[i]);
        }
      }

      Filenames->Free();

      return ConfigFiles;
    }

    TStringList *TPrinterControl::LoadPrinterInfoFromFile(AnsiString PrinterName)
    {
      TStringList *PrinterInfo = new TStringList;
      AnsiString ReturnedPrinterName;
      AnsiString ReturnedPortName;
      AnsiString ReturnedPortMonitorName;


      if (!ReadPrinterInfo(PrtInfoPath + "\\" + PrinterName + ".Prt"))
      {
        Messages->Add("Error reading PrinterInfo from file!");
      }
      ReturnedPrinterName = SelectedPrinterInfo->pPrinterName;
      ReturnedPortName = SelectedPrinterInfo->pPortName;
      ReturnedPortMonitorName = GetPortMonitor(SelectedPrinterInfo->pPortName);

      PrinterInfo->Add(ReturnedPrinterName);
      PrinterInfo->Add(ReturnedPortName);
      PrinterInfo->Add(ReturnedPortMonitorName);

      return PrinterInfo;
    }

    bool TPrinterControl::PrinterPropertiesDialog(AnsiString PrinterName, HANDLE hWnd)
    {
            HANDLE hPrinter;
            DWORD dwNeeded, dwReturned;
            PRINTER_INFO_2* pPrtInfo;
      PRINTER_DEFAULTS pdPrinter;

            // Assign desired access level to PRINTER_DEAFULTS
      pdPrinter.DesiredAccess = PRINTER_ALL_ACCESS;

            pdPrinter.pDevMode = NULL;
            pdPrinter.pDatatype = NULL;

            //Open handle to printer.
            if(!OpenPrinter(PrinterName.c_str(), &hPrinter, &pdPrinter))
```

FIG. 6.51

```
    {
      Messages->Add("OpenPrinter() Failed!");
      return false;
    }

        //Select the default printer.
        if(NULL!=hPrinter){

                // Get the buffer size needed
                GetPrinter(hPrinter,2,NULL,0,&dwNeeded);

                pPrtInfo=(PRINTER_INFO_2*)malloc(dwNeeded);
      ZeroMemory(pPrtInfo, dwNeeded);

                //get the printer info
                GetPrinter(hPrinter,2,(unsigned char*)pPrtInfo,dwNeeded,&dwReturned);

      if (!PrinterProperties(hWnd, hPrinter))
      {
        Messages->Add("PrinterProperties() Failed!");
                ClosePrinter(hPrinter);
        free(pPrtInfo);
        return false;
      }

                //Close the handle to the printer.
                ClosePrinter(hPrinter);
        }

  free(pPrtInfo);

  return true;
}

bool TPrinterControl::DeleteLocalPrinter(AnsiString PrinterName)
{
        HANDLE hPrinter;
    PRINTER_DEFAULTS pdPrinter;

        // Assign desired access level to PRINTER_DEAFULTS
        pdPrinter.DesiredAccess = PRINTER_ALL_ACCESS;
        pdPrinter.pDevMode = NULL;
        pdPrinter.pDatatype = NULL;

        //Open handle to printer.
        if(!OpenPrinter(PrinterName.c_str(), &hPrinter, &pdPrinter))
    {
      Messages->Add("DeletePrinter() Failed!");
      return false;
    }

        //Select the default printer.
        if(NULL == hPrinter)
    {
      Messages->Add("DeletePrinter() Failed! NULL Handle.");
      return false;
    }
```

FIG. 6.52

```
    SetPrinter(hPrinter, 0, NULL, [illegible]NTER_CONTROL_PURGE);

    Sleep(250);

    DeletePrinter(hPrinter);

          //Close the handle to the printer.
          ClosePrinter(hPrinter);

    return true;
}

bool TPrinterControl::DeletePrinterConfig(AnsiString PrinterConfigName)
{
    AnsiString PrinterConfigPath;
    bool bReturn = true;


    PrinterConfigPath = PrtInfoPath + "\\" + PrinterConfigName;

    if (FileExists(PrinterConfigPath + ".Prt") &&
       FileExists(PrinterConfigPath + ".Dev"))
    {
       if (!DeleteFile(PrinterConfigPath + ".Prt") ||
          !DeleteFile(PrinterConfigPath + ".Dev"))
       {
          bReturn = false;
       }
    }
    else
    {
       Messages->Add("Files Not Found: " + PrinterConfigPath);
       bReturn = false;
    }

    return bReturn;
}

AnsiString TPrinterControl::GetPrinterShareName(AnsiString PrinterName)
{
          HANDLE hPrinter;
          DWORD dwNeeded, dwReturned;
          PRINTER_INFO_2* pPrtInfo;
    PRINTER_DEFAULTS pdPrinter;
    AnsiString ShareName;
    AnsiString ServerName;
    AnsiString FullShareName;

          // Assign desired access level to PRINTER_DEAFULTS
          pdPrinter.DesiredAccess = PRINTER_ACCESS_USE;
          pdPrinter.pDevMode = NULL;
          pdPrinter.pDatatype = NULL;

          //Open handle to printer.
          if(!OpenPrinter(PrinterName.c_str(), &hPrinter, &pdPrinter))
    {
       Messages->Add("OpenPrinter() Failed!");
```

FIG. 6.53

```
    return "";
  }

        //Select the default printer.
        if(NULL!=hPrinter){

                // Get the buffer size needed
                GetPrinter(hPrinter,2,NULL,0,&dwNeeded);

                pPrtInfo=(PRINTER_INFO_2*)malloc(dwNeeded);
    ZeroMemory(pPrtInfo, dwNeeded);

                //get the printer info
                GetPrinter(hPrinter,2,(unsigned char*)pPrtInfo,dwNeeded,&dwReturned);

    ShareName = pPrtInfo->pShareName;
    ServerName = pPrtInfo->pServerName;

                //Close the handle to the printer.
                ClosePrinter(hPrinter);
        }

  free(pPrtInfo);

  if (ServerName.IsEmpty())
    FullShareName = ShareName;
  else
    FullShareName = ServerName + "\\" + ShareName;

  return FullShareName;
}



AnsiString TPrinterControl::GetPrinterFullName(AnsiString PrinterName)
{
        HANDLE hPrinter;
        DWORD dwNeeded, dwReturned;
        PRINTER_INFO_2* pPrtInfo;
  PRINTER_DEFAULTS pdPrinter;
  AnsiString FullName;

        // Assign desired access level to PRINTER_DEAFULTS
        pdPrinter.DesiredAccess = PRINTER_ACCESS_USE;
        pdPrinter.pDevMode = NULL;
        pdPrinter.pDatatype = NULL;

        //Open handle to printer.
        if(!OpenPrinter(PrinterName.c_str(), &hPrinter, &pdPrinter))
  {
    Messages->Add("OpenPrinter() Failed!");
    return "";
  }

        //Select the default printer.
        if(NULL!=hPrinter){
```

FIG. 6.54

```
                // Get the buff[illegible]ze needed
                GetPrinter(hPrinter,2,NULL,0,&dwNeeded);

                pPrtInfo=(PRINTER_INFO_2*)malloc(dwNeeded);
        ZeroMemory(pPrtInfo, dwNeeded);

                //get the printer info
                GetPrinter(hPrinter,2,(unsigned char*)pPrtInfo,dwNeeded,&dwReturned);

        FullName = pPrtInfo->pPrinterName;

                //Close the handle to the printer.
                ClosePrinter(hPrinter);
           }

      free(pPrtInfo);

      return FullName;
    }


    bool TPrinterControl::ClearNetworkPrinters()
    {
            DWORD dwBytesNeeded;
            DWORD dwPrtRet;
            LPPRINTER_INFO_4 pPrtInfo;
            int i=0;

            //Get the memory needed for structure.
            EnumPrinters(PRINTER_ENUM_CONNECTIONS,NULL,4,NULL,0,&dwBytesNeeded,&dwPrtRet);

            //Allocate the memory for the structure.
            pPrtInfo =(LPPRINTER_INFO_4)malloc(dwBytesNeeded);

            //Enumerate the printers.
            if
(!EnumPrinters(PRINTER_ENUM_CONNECTIONS,NULL,4,(LPBYTE)pPrtInfo,dwBytesNeeded,&dwBytesNeeded,&dwPrtR
et))
                    return false;

            //Delete the printer connection.
            for (i = 0; i < (int)dwPrtRet; i++)
                    DeletePrinterConnection((pPrtInfo++)->pPrinterName);

            return true;
    }


    bool TPrinterControl::SetIcaPrinterRights()
    {
      TStringList *LocalPrinterList = new TStringList;
      PRINTER_INFO_2 *InstalledPrinterInfo = new PRINTER_INFO_2;
      DWORD InstalledPrinterInfoReturned;
      DWORD dwSize;
      DWORD dwNeeded;
      AnsiString Comment;
      AnsiString PrinterName;
```

FIG. 6.55

```
 int i;

EnumPrinters(PRINTER_ENUM_LOCAL, NULL, 2,(BYTE*)InstalledPrinterInfo,
  0, &dwSize, &InstalledPrinterInfoReturned);

InstalledPrinterInfo = (PRINTER_INFO_2*)malloc(dwSize);
  ZeroMemory(InstalledPrinterInfo, dwSize);

if (!EnumPrinters(PRINTER_ENUM_LOCAL, NULL, 2,(BYTE*)InstalledPrinterInfo,
 dwSize, &dwNeeded, &InstalledPrinterInfoReturned))
{
   return false;
}

i = -1;
while ((int)InstalledPrinterInfoReturned > ++i)
{
  PrinterName = InstalledPrinterInfo[i].pPrinterName;
  Comment = InstalledPrinterInfo[i].pComment;
  if (0 < Comment.AnsiPos("Auto Created Client Printer"))
  {
   PrinterSetOwnerOnlyRights(PrinterName);
   PrinterAddAccessRights(PrinterName, "SYSTEM", CONTROL_FULL);
  }
}

free(InstalledPrinterInfo);
return true;
}

bool TPrinterControl::CopyConfiguration(AnsiString Source, AnsiString Destination)
{
 AnsiString PrinterConfigSourcePath;
 AnsiString PrinterConfigDestPath;

 PrinterConfigSourcePath = PrtInfoPath + "\\" + Source;
 PrinterConfigDestPath = PrtInfoPath + "\\" + Destination;

 if (FileExists(PrinterConfigSourcePath + ".Prt") &&
    FileExists(PrinterConfigSourcePath + ".Dev"))
 {
    if (0 == ::CopyFile(String(PrinterConfigSourcePath + ".Prt").c_str(),
       String(PrinterConfigDestPath + ".Prt").c_str(), NULL))
    {
       return false;
    }
    if (0 == ::CopyFile(String(PrinterConfigSourcePath + ".Dev").c_str(),
         String(PrinterConfigDestPath + ".Dev").c_str(), NULL))
    {
       DeleteFile(PrinterConfigDestPath + ".Prt");
       return false;
    }
 }
 else
 {
    Messages->Add("Files Not Found: " + PrinterConfigSourcePath);
    return false;
```

FIG. 6.56

```
    }

    return true;
}

bool TPrinterControl::SaveLocalDriver(AnsiString DriverName)
{
    AnsiString PrinterName;
    HANDLE hPrinter;

    PrinterName = "PMPAdmin#" + DriverName;
    SelectedPrinterInfo->pPrinterName = PrinterName.c_str();
    SelectedPrinterInfo->pPortName = "LPT1:";
    SelectedPrinterInfo->pDriverName = DriverName.c_str();
    SelectedPrinterInfo->pPrintProcessor = "winprint";

    //Add the printer
    hPrinter = AddPrinter(NULL, 2, (unsigned char*)SelectedPrinterInfo);

    if (NULL == hPrinter)
        return false;

    ClosePrinter(hPrinter);
    hPrinter = NULL;

    if (!SaveLocalPrinter(PrinterName, DriverName))
    {
        DeleteLocalPrinter(PrinterName);
        return false;
    }

    DeleteLocalPrinter(PrinterName);
    return true;
}

AnsiString TPrinterControl::CleanupFilename(AnsiString Filename)
{
    int Index;
    int i;
    TStringList *InvalidList = new TStringList;

    if (Filename.IsEmpty())
        return Filename;

    InvalidList->Add("\\");
    InvalidList->Add("/");
    InvalidList->Add(":");
    InvalidList->Add("?");
    InvalidList->Add("*");

    i = -1;
    while (InvalidList->Count > ++i)
    {
        Index = Filename.AnsiPos(InvalidList->Strings[i]);
        if (0 < Index)
        {
```

FIG. 6.57

```
            Filename.Delete(Index, [illegible]
            Filename = CleanupFilename(Filename);
        }
    }

    return Filename;
}

AnsiString TPrinterControl::GetIcaClientPort(AnsiString OldPort)
{
    int BackSlash = 0;
    AnsiString NewPort;
    AnsiString Port;

    BackSlash = OldPort.AnsiPos("\\");

    Port = OldPort.SubString( (BackSlash + 1),
      (OldPort.Length() - BackSlash) );

    NewPort = "Client\\" + String(getenv("CLIENTNAME")) + "#\\" + Port;


    return NewPort;
}

PRINTER_INFO_2 *TPrinterControl::GetPrinterInfo2(AnsiString PrinterName)
{
            HANDLE hPrinter;
            DWORD dwNeeded, dwReturned;
            PRINTER_INFO_2* pPrtInfo;
    PRINTER_DEFAULTS pdPrinter;

            // Assign desired access level to PRINTER_DEAFULTS
            pdPrinter.DesiredAccess = PRINTER_ACCESS_USE;
            pdPrinter.pDevMode = NULL;
            pdPrinter.pDatatype = NULL;

            //Open handle to printer.
            if(!OpenPrinter(PrinterName.c_str(), &hPrinter, &pdPrinter))
    {
        return NULL;
    }

            //Select the default printer.
    if(NULL!=hPrinter){

                        // Get the buffer size needed
                        GetPrinter(hPrinter,2,NULL,0,&dwNeeded);

                        pPrtInfo=(PRINTER_INFO_2*)malloc(dwNeeded);
        ZeroMemory(pPrtInfo, dwNeeded);

                        //get the printer info
                        GetPrinter(hPrinter,2,(unsigned char*)pPrtInfo,dwNeeded,&dwReturned);

                        //Close the handle to the printer.
                        ClosePrinter(hPrinter);
```

FIG. 6.58

```
        }

   return pPrtInfo;
}

AnsiString TPrinterControl::GetStatusString(DWORD dwStatus)
{
   AnsiString Status;

   switch(dwStatus)
   {
      case(PRINTER_STATUS_BUSY):
         Status = "Busy";
         break;
      case(PRINTER_STATUS_DOOR_OPEN):
         Status = "Door Open";
         break;
      case(PRINTER_STATUS_ERROR):
         Status = "Error";
         break;
      case(PRINTER_STATUS_INITIALIZING):
         Status = "Initializing";
         break;
      case(PRINTER_STATUS_IO_ACTIVE):
         Status = "I/O Active";
         break;
      case(PRINTER_STATUS_MANUAL_FEED):
         Status = "Manual Feed";
         break;
      case(PRINTER_STATUS_NO_TONER):
         Status = "No Toner";
         break;
      case(PRINTER_STATUS_NOT_AVAILABLE):
         Status = "Not Available";
         break;
      case(PRINTER_STATUS_OFFLINE):
         Status = "Offline";
         break;
      case(PRINTER_STATUS_OUT_OF_MEMORY):
         Status = "Out of Memory";
         break;
      case(PRINTER_STATUS_OUTPUT_BIN_FULL):
         Status = "Output Bin Full";
         break;
      case(PRINTER_STATUS_PAGE_PUNT):
         Status = "Page Punt";
         break;
      case(PRINTER_STATUS_PAPER_JAM):
         Status = "Paper Jam";
         break;
      case(PRINTER_STATUS_PAPER_OUT):
         Status = "Paper Out";
         break;
      case(PRINTER_STATUS_PAPER_PROBLEM):
         Status = "Paper Problem";
         break;
      case(PRINTER_STATUS_PAUSED):
```

FIG. 6.59

```
        Status = "Paused";
        break;
      case(PRINTER_STATUS_PENDING_DELETION):
        Status = "Pending Deletion";
        break;
      case(PRINTER_STATUS_POWER_SAVE):
        Status = "Power Save";
        break;
      case(PRINTER_STATUS_PRINTING):
        Status = "Printing";
        break;
      case(PRINTER_STATUS_PROCESSING):
        Status = "Processing";
        break;
      case(PRINTER_STATUS_SERVER_UNKNOWN):
        Status = "Server Unknown";
        break;
      case(PRINTER_STATUS_TONER_LOW):
        Status = "Toner Low";
        break;
      case(PRINTER_STATUS_USER_INTERVENTION):
        Status = "User Intervention";
        break;
      case(PRINTER_STATUS_WAITING):
        Status = "Waiting";
        break;
      case(PRINTER_STATUS_WARMING_UP):
        Status = "Warming Up";
        break;
      default:
        Status = "Ready";
        break;
    }

    return Status;
}
```

FIG. 6.60